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, andhow 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 datawere archived at the Interuniversity Consortium for Political and Social Research at the Universityof 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

summer, either 1981 or 1982] in each SCC, classifying users by age, sex, race, and type ofactivity. 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).

- "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.

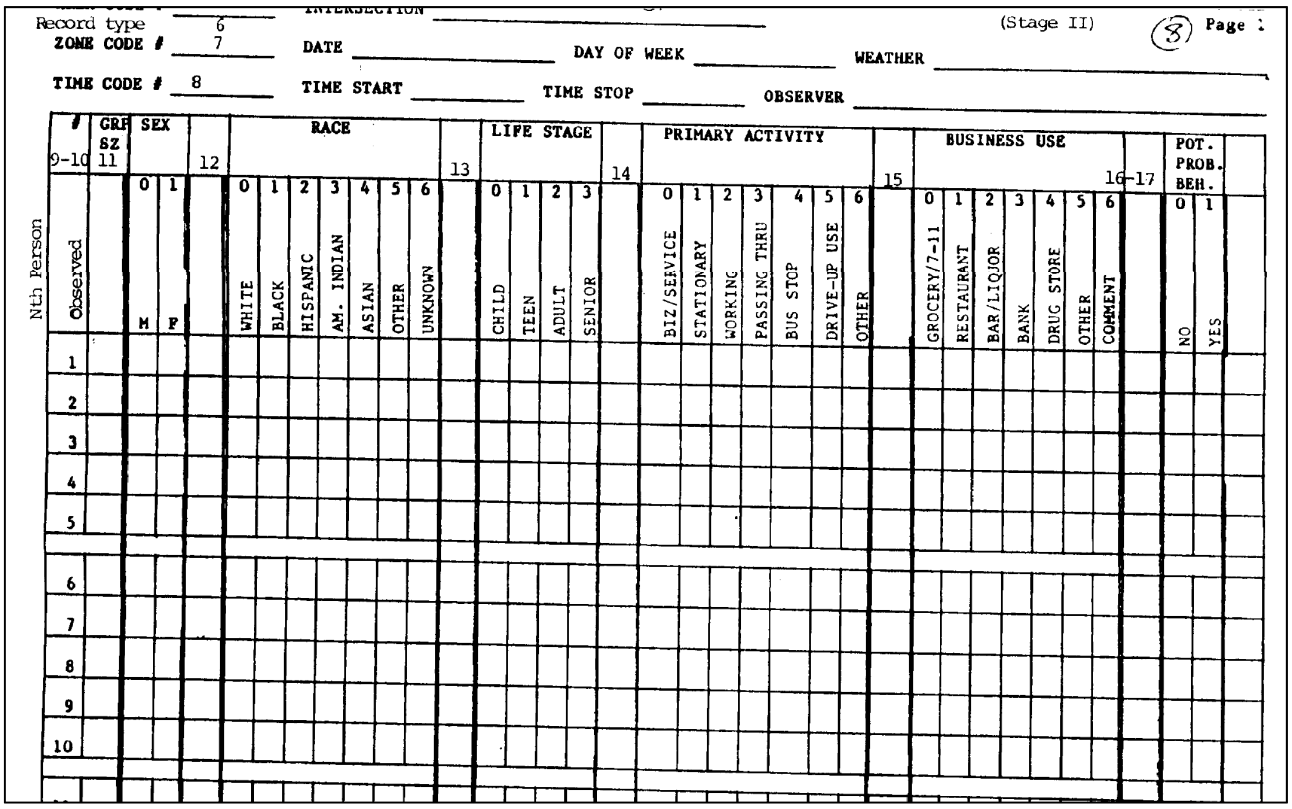
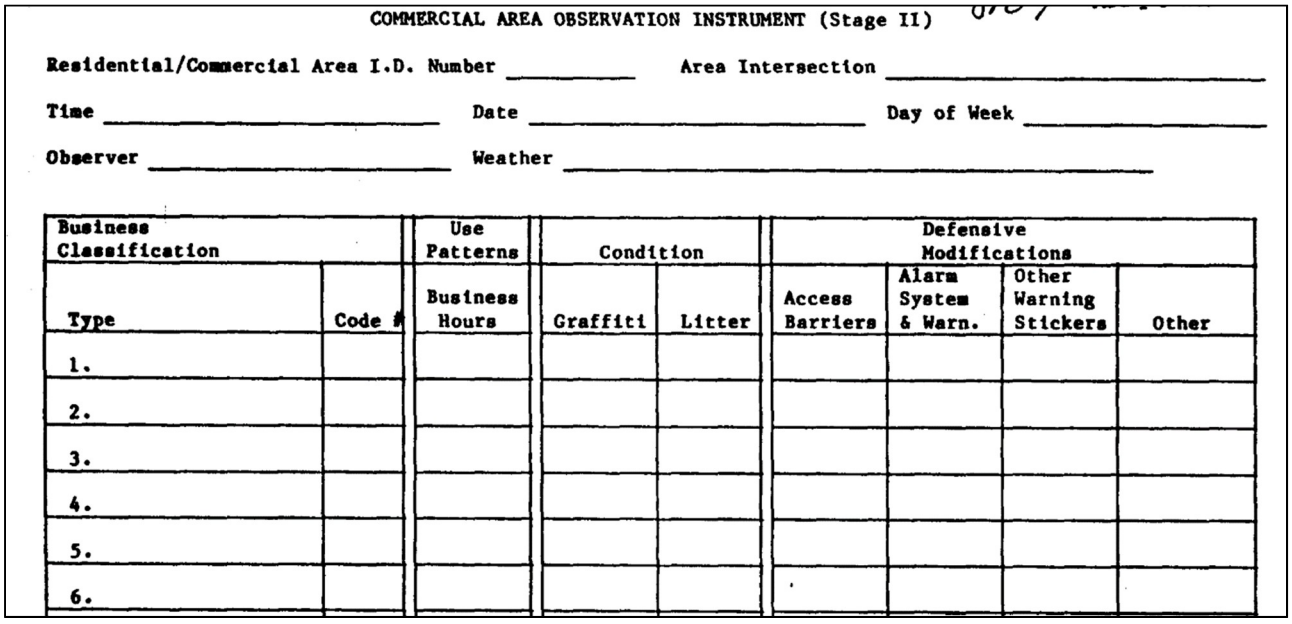


Figure 1 Portion of coding sheet for behavioral observation. Source: (Mcpherson et al., 2006)

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

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

APPENDIX B: DO FILE: DATA PROCESSING AND RESULTS

```
* groff_handbook_2020_multilevel_006_REVISED
* BRINGS IN ORIGINAL DATA FILE
* DOES BASIC FILE PROCESSING
* GENERATES VARIABLES AND RUNS FOR MULTILEVEL CHAPTER
*************************************************************************
* SET UP COMMANDS - START
clear all
macro drop _all
set autotabgraphs on
set more off
capture log close _all
set linesize 150
translator set smcl2pdf tmargin 0.3
translator set smcl2pdf bmargin 0.3
translator set smcl2pdf rmargin 0.3
translator set smcl2pdf lmargin 0.5
translator set smcl2pdf fontsize 7
cls
* SET UP COMMANDS - END
*************************************************************************
* Setting working directory and starting log file
cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
log using groff_handbook_2020_multilevel_006_REVISED.log, replace
cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
*************************************************************************


**********************
*  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
* START
**********************
* bring in beh obs data file
clear all
use "C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta"

tolower CENTERCO-MAXGROUP

describe
summ

* cleaning up missing values

recode nthpersn(99=.)
tab nthpersn, missing

recode grpsize (99=.)
tab grpsize, missing

tab1 sex-bususe1, missing
tab1 sex-bususe1, missing nolabel

recode sex-bususe1 (9=.)
tab1 sex-bususe1, missing

* saving file with missing values fixed
save msp_beh_obs_v_bb.dta, replace

**********************
*  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
* END
**********************

**********************
```

```
* bringing in the file that already has missing values fixed
* additional data processing
* BEGIN
**********************
clear all
use msp_beh_obs_v_bb.dta

summ
describe

***
* make a white dummy variable
gen whitedum=0
replace whitedum=1 if(race==0)
replace whitedum=. if(race==.)
tab whitedum race, missing
label var whitedum "1 = white pedestrian 0 = other"

***
* make a kid or teen pedestrian dummy variable
gen kidrteen=0
replace kidrteen=1 if(age<=1)
replace kidrteen=1 if age==.
tab kidrteen age, missing nolabel
label var kidrteen "1 = kid or teen 0 = other"

***
* looking at the raw relationship
* in table form
tab primbiz kidrteen, col lrchi

***
* some additional variables

* centerco is the place variable - level 2 identifier
* going to sort on that
sort centerco

* create a kidrteen variable that is just the commercial center averages
* this is just the level 2 variation in this predictor
by centerco: egen x_kidrteen=mean(kidrteen)
label var x_kidrteen "SCC level proportion kid/teen pedestrians"

***
* creating a centered version of x_kidrteen
center x_kidrteen
label var c_x_kidrteen "overall centered version of SCC means on kidrteen"

* create a curvilinear component of ecological kidrteen
gen sq_x_kidrteen=c_x_kidrteen*c_x_kidrteen
label var sq_x_kidrteen  "squared proportion teens at SCC level"
corr sq_x_kidrteen c_x_kidrteen
graph twoway (scatter sq_x_kidrteen c_x_kidrteen)  (lfit sq_x_kidrteen c_x_kidrteen)

* level 2 variation in the outcome
* creating a level 2 variable
by centerco: egen x_primbiz=mean(primbiz)
label var x_primbiz "SCC level proportion pedestrians using a business or service"

* create a kidrteen variable reflecting just within center variation
* this is just the level 1 variation in this predictor
by centerco: center kidrteen, gen(wi_kidrteen)
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
```

```
**********************
* merge collapsed SCC level file and unit level file
* START
**********************
clear all
use msp_beh_obs_v_dd.dta
* do merge
merge m:1 centerco using msp_beh_obs_v_ee_collapse.dta

* save merged file
notes: v dd has center mean and sd variables on some things
save msp_beh_obs_v_ee.dta, replace

**********************
* merge collapsed SCC level file and unit level file
* END
**********************

**********************
* looking at bivariate relationships
*   at both pedestrian and center level
*   between key predictor - child or teen pedestrian
*   and key outcome - primarily business user
* START
**********************

* look at pedestrian level link between kidrteen and primbiz
clear all
use msp_beh_obs_v_ee.dta
tab primbiz kidrteen, col lrchi

* let's look at center level connection between kidrteen and primbiz
clear all
use  msp_beh_obs_v_ee_collapse.dta, replace
sort x_kidrteen
list x_kidrteen centerco
tab centerco, nolabel
tab centerco
list x_kidrteen if(centerco!=990)

* level 2  SCC level relationship
* all SCCs
graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen)|| (qfit x_prbiz x_kidrteen )
graph save x_prbiz_x_kidrteen.gph, replace

* same graph without 38th and 4th
graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen)|| (qfit x_prbiz x_kidrteen )
 if(centerco!=990)
graph save x_prbiz_x_kidrteen_lt_minus_990.gph, replace

**********************
* looking at bivariate relationships
*   at both pedestrian and center level
*   between key predictor - child or teen pedestrian
*   and key outcome - primarily business user
* END
**********************

*******************************************************************************
*
*
*   ON TO THE MONOLEVEL AND MIXED MODELS
*
```

```
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
```

```
* looking at the level-2 relationship between young peds and biz peds.

graph twoway (lowess primbiz kidrteen) || (scatter primbiz kidrteen)|| (qfit primbiz kidrteen ) || (lfit primbiz kidrteen )
graph save x_prbiz_x_kidrteen.gph, replace

* worked on graph to create revised version

**********************
* further descriptive examinations
* end
**********************

log close
exit
*********************************************************


```

APPENDIX C: LOG FILE: RESULTS

```
------------------------------------------------------------------------------------------------------------------
      name:  <unnamed>
       log:
       C:\PCW5\groff_2020\ICPSR_02371\DS0002\groff_handbook_2020_multilevel_006_REVISED.log
  log type:  text
 opened on:  23 Feb 2021, 20:15:34

. cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
C:\PCW5\groff_2020\ICPSR_02371\DS0002

. ************************************************************************
.
.
. ***********************
. *  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
. * START
. ***********************
. * bring in beh obs data file
. clear all

. use "C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta"

.
. tolower CENTERCO-MAXGROUP

.
. describe

Contains data from C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta
  obs:         7,096
 vars:            46                          15 JUN 2020 18:01
------------------------------------------------------------------------------------------------------------------
              storage   display    value
variable name   type    format     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
bususe1         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
```

```
raceasn         double  %12.0g     RACEASN    DUMMY VARIABLE: RACE ASIAN
racenonw        double  %12.0g     RACENONW   DUMMY VARIABLE: RACE NONWHITE
alone           double  %12.0g     ALONE      DUMMY VARIABLE: ALONE
groupgt3        double  %12.0g     GROUPGT3   DUMMY VARIABLE: GROUP > 3
singlew         double  %12.0g     SINGLEW    DUMMY VARIABLE: SINGLE WOMAN
sexmale         double  %12.0g     SEXMALE    DUMMY VARIABLE: MALE
wkdayam         double  %12.0g     WKDAYAM    DUMMY VARIABLE: WEEKDAY AM
wkdaynoo        double  %12.0g     WKDAYNOO   DUMMY: WEEKDAY NOON
wkdayaft        double  %12.0g     WKDAYAFT   DUMMY: WEEKDAY AFTERNOON
wkdayrus        double  %12.0g     WKDAYRUS   DUMMY: WEEKDAY RUSH HOURS
satmidda        double  %12.0g     SATMIDDA   DUMMY: SATURDAY MIDDAY
wkndnite        double  %12.0g     WKNDNITE   DUMMY: WEEKEND NIGHT
child           double  %12.0g     CHILD      DUMMY: CHILD
teen            double  %12.0g     TEEN       DUMMY: TEEN
adult           double  %12.0g     ADULT      DUMMY: ADULT
senior          double  %12.0g     SENIOR     DUMMY: SENIOR
nonpurps        double  %12.0g     NONPURPS   DUMMY: NONPURPOSEFUL
mngroup         double  %12.0g                AVERAGE GROUP SIZE IN CENTER
maxgroup        double  %12.0g                LARGEST GROUP SEEN IN CENTER
-------------------------------------------------------------------------------
-------------------------------------------------------------
Sorted by:
     Note: Dataset has changed since last saved.

. summ

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    centerco |      7,096    556.8715    303.4766         40        990
        zone |      7,096    1.556229    .6831883          1          3
    timecode |      7,096     3.36429    1.550799          1          6
    nthpersn |      7,096     15.8075    11.22591          1         99
     grpsize |      7,096    1.651776    3.009511          1         99
-------------+---------------------------------------------------------
         sex |      7,096    .5088782    1.083247          0          9
        race |      7,096    .3547069    1.335703          0          9
         age |      7,096    1.947999    1.147096          0          9
     primary |      7,096    1.041432    1.731514          0          9
     bususe1 |      7,096    5.354425    3.716023          0          9
-------------+---------------------------------------------------------
     usegroc |      7,096    .1971533    .3978771          0          1
     userest |      7,096    .0724352    .2592254          0          1
      usebar |      7,096    .0397407    .1953631          0          1
     usebank |      7,096    .0239572    .1529265          0          1
     usedrug |      7,096    .0405862    .1973436          0          1
-------------+---------------------------------------------------------
     useothr |      7,096    .1667136    .3727463          0          1
     primbiz |      7,096    .6777057    .4673879          0          1
    primstnr |      7,096    .0163472    .1268159          0          1
    primwork |      7,096     .070885    .2566507          0          1
    primpass |      7,096    .1495209    .3566263          0          1
-------------+---------------------------------------------------------
     primbus |      7,096    .0486189    .2150852          0          1
    primdriv |      7,096    .0121195    .1094272          0          1
    primothr |      7,096    .0145152      .11961          0          1
    racewhit |      7,096    .8613303    .3456259          0          1
    raceafra |      7,096    .0889233    .2846531          0          1
-------------+---------------------------------------------------------
    racehisp |      7,096    .0080327    .0892709          0          1
    raceindn |      7,096    .0073281    .0852959          0          1
     raceasn |      7,096    .0163472    .1268159          0          1
    racenonw |      7,096    .1206313    .3257213          0          1
       alone |      7,096    .6481116     .477593          0          1
-------------+---------------------------------------------------------
    groupgt3 |      7,096     .054115    .2262604          0          1
     singlew |      7,096    .2354848    .4243313          0          1
```

```
      sexmale |      7,096    .5937148    .4911736          0          1
      wkdayam |      7,096    .1503664    .3574554          0          1
     wkdaynoo |      7,096    .1886979     .391296          0          1
-------------+---------------------------------------------------------
     wkdayaft |      7,096    .1713641    .3768534          0          1
     wkdayrus |      7,096    .2080045    .4059087          0          1
     satmidda |      7,096    .1989853    .3992651          0          1
     wkndnite |      7,096    .0825817    .2752684          0          1
        child |      7,096    .0815953    .2737664          0          1
-------------+---------------------------------------------------------
         teen |      7,096    .1000564    .3000963          0          1
        adult |      7,096    .7043405    .4563708          0          1
       senior |      7,096    .0978016    .2970671          0          1
     nonpurps |      7,096    .1803833    .3845335          0          1
      mngroup |      7,096    1.569302    .1745081     1.3409      2.197
-------------+---------------------------------------------------------
     maxgroup |      7,096    6.168405    2.055939          4          9

.
. * cleaning up missing values
.
. recode nthpersn(99=.)
(nthpersn: 2 changes made)

. tab nthpersn, missing

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

```
           38 |         40        0.56       96.14
           39 |         35        0.49       96.63
           40 |         35        0.49       97.13
           41 |         28        0.39       97.52
           42 |         25        0.35       97.87
           43 |         21        0.30       98.17
           44 |         20        0.28       98.45
           45 |         16        0.23       98.68
           46 |         11        0.16       98.83
           47 |         10        0.14       98.97
           48 |          9        0.13       99.10
           49 |          8        0.11       99.21
           50 |          8        0.11       99.32
           51 |          7        0.10       99.42
           52 |          5        0.07       99.49
           53 |          4        0.06       99.55
           54 |          4        0.06       99.61
           55 |          4        0.06       99.66
           56 |          3        0.04       99.70
           57 |          2        0.03       99.73
           58 |          2        0.03       99.76
           59 |          2        0.03       99.79
           60 |          2        0.03       99.82
           61 |          2        0.03       99.84
           62 |          2        0.03       99.87
           63 |          2        0.03       99.90
           64 |          1        0.01       99.92
           65 |          1        0.01       99.93
           66 |          1        0.01       99.94
           67 |          1        0.01       99.96
           68 |          1        0.01       99.97
            . |          2        0.03      100.00
-------------+-----------------------------------
        Total |      7,096      100.00

.
. recode grpsize (99=.)
(grpsize: 6 changes made)

. tab grpsize, missing

    SIZE OF |
      GROUP |
   OBSERVED |      Freq.     Percent        Cum.
------------+-----------------------------------
          1 |      4,599       64.81       64.81
          2 |      1,611       22.70       87.51
          3 |        496        6.99       94.50
          4 |        260        3.66       98.17
          5 |         55        0.78       98.94
          6 |         24        0.34       99.28
          7 |         23        0.32       99.61
          9 |         22        0.31       99.92
          . |          6        0.08      100.00
------------+-----------------------------------
        Total |      7,096      100.00

.
. tab1 sex-bususe1, missing

-> tabulation of sex

     SEX OF |
 PEDESTRIAN |      Freq.     Percent        Cum.
------------+-----------------------------------
       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 bususe1

    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-bususe1, missing nolabel

-> tabulation of sex

     SEX OF |
```

```
 PEDESTRIAN |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      4,213       59.37       59.37
          1 |      2,792       39.35       98.72
          9 |         91        1.28      100.00
------------+-----------------------------------
      Total |      7,096      100.00

-> tabulation of race

       RACE |
   OBSERVED |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      6,112       86.13       86.13
          1 |        631        8.89       95.03
          2 |         57        0.80       95.83
          3 |         52        0.73       96.56
          4 |        116        1.63       98.20
          9 |        128        1.80      100.00
------------+-----------------------------------
      Total |      7,096      100.00

-> tabulation of age

        AGE |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        579        8.16        8.16
          1 |        710       10.01       18.17
          2 |      4,998       70.43       88.60
          3 |        694        9.78       98.38
          9 |        115        1.62      100.00
------------+-----------------------------------
      Total |      7,096      100.00

-> tabulation of primary

    PRIMARY |
   ACTIVITY |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      4,809       67.77       67.77
          1 |        116        1.63       69.41
          2 |        503        7.09       76.49
          3 |      1,061       14.95       91.45
          4 |        345        4.86       96.31
          5 |         86        1.21       97.52
          6 |        103        1.45       98.97
          9 |         73        1.03      100.00
------------+-----------------------------------
      Total |      7,096      100.00

-> tabulation of bususe1

   BUSINESS |
       USED |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      1,399       19.72       19.72
          1 |        514        7.24       26.96
          2 |        282        3.97       30.93
          3 |        170        2.40       33.33
          4 |        288        4.06       37.39
          5 |      1,183       16.67       54.06
          9 |      3,260       45.94      100.00
------------+-----------------------------------
      Total |      7,096      100.00

.
```

```
. recode sex-bususe1 (9=.)
(sex: 91 changes made)
(race: 128 changes made)
(age: 115 changes made)
(primary: 73 changes made)
(bususe1: 3260 changes made)

. tab1 sex-bususe1, missing

-> tabulation of sex

     SEX OF |
 PEDESTRIAN |      Freq.     Percent        Cum.
------------+-----------------------------------
       Male |      4,213       59.37       59.37
     Female |      2,792       39.35       98.72
          . |         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
               . |        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
             . |        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
           . |         73        1.03      100.00
-------------+-----------------------------------
       Total |      7,096      100.00

-> tabulation of bususe1

    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
           . |      3,260       45.94      100.00
-------------+-----------------------------------
       Total |      7,096      100.00

.
. * saving file with missing values fixed
. save msp_beh_obs_v_bb.dta, replace
file msp_beh_obs_v_bb.dta saved

.
. ************************
. *  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
. * END
. ************************
.
. ************************
. * bringing in the file that already has missing values fixed
. * additional data processing
. * BEGIN
. ************************
. clear all

. use msp_beh_obs_v_bb.dta

.
. summ

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    centerco |      7,096    556.8715    303.4766          40        990
        zone |      7,096    1.556229    .6831883           1          3
    timecode |      7,096     3.36429    1.550799           1          6
    nthpersn |      7,094    15.78404    11.14022           1         68
     grpsize |      7,090    1.569394    1.018406           1          9
-------------+---------------------------------------------------------
         sex |      7,005    .3985724    .4896393           0          1
        race |      6,968    .1958955    .6469061           0          4
         age |      6,981    1.831829    .7103984           0          3
     primary |      7,023    .9587071    1.537531           0          6
     bususe1 |      3,836    2.256257    2.156044           0          5
-------------+---------------------------------------------------------
     usegroc |      7,096    .1971533    .3978771           0          1
     userest |      7,096    .0724352    .2592254           0          1
      usebar |      7,096    .0397407    .1953631           0          1
     usebank |      7,096    .0239572    .1529265           0          1
     usedrug |      7,096    .0405862    .1973436           0          1
-------------+---------------------------------------------------------
     useothr |      7,096    .1667136    .3727463           0          1
     primbiz |      7,096    .6777057    .4673879           0          1
    primstnr |      7,096    .0163472    .1268159           0          1
    primwork |      7,096     .070885    .2566507           0          1
    primpass |      7,096    .1495209    .3566263           0          1
-------------+---------------------------------------------------------
     primbus |      7,096    .0486189    .2150852           0          1
    primdriv |      7,096    .0121195    .1094272           0          1
    primothr |      7,096    .0145152      .11961           0          1
    racewhit |      7,096    .8613303    .3456259           0          1
    raceafra |      7,096    .0889233    .2846531           0          1
-------------+---------------------------------------------------------
    racehisp |      7,096    .0080327    .0892709           0          1
```

```
    raceindn |      7,096    .0073281    .0852959          0          1
     raceasn |      7,096    .0163472    .1268159          0          1
    racenonw |      7,096    .1206313    .3257213          0          1
       alone |      7,096    .6481116     .477593          0          1
-------------+---------------------------------------------------------
    groupgt3 |      7,096     .054115    .2262604          0          1
     singlew |      7,096    .2354848    .4243313          0          1
     sexmale |      7,096    .5937148    .4911736          0          1
     wkdayam |      7,096    .1503664    .3574554          0          1
    wkdaynoo |      7,096    .1886979     .391296          0          1
-------------+---------------------------------------------------------
    wkdayaft |      7,096    .1713641    .3768534          0          1
    wkdayrus |      7,096    .2080045    .4059087          0          1
    satmidda |      7,096    .1989853    .3992651          0          1
    wkndnite |      7,096    .0825817    .2752684          0          1
       child |      7,096    .0815953    .2737664          0          1
-------------+---------------------------------------------------------
        teen |      7,096    .1000564    .3000963          0          1
       adult |      7,096    .7043405    .4563708          0          1
      senior |      7,096    .0978016    .2970671          0          1
    nonpurps |      7,096    .1803833    .3845335          0          1
     mngroup |      7,096    1.569302    .1745081     1.3409      2.197
-------------+---------------------------------------------------------
    maxgroup |      7,096    6.168405    2.055939          4          9

. describe

Contains data from msp_beh_obs_v_bb.dta
  obs:         7,096
 vars:            46                          23 Feb 2021 20:15
-------------------------------------------------------------------------------
-------------------------------------------------------------

              storage   display    value
variable name   type    format     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
bususe1         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
raceasn         double  %12.0g     RACEASN    DUMMY VARIABLE: RACE ASIAN
racenonw        double  %12.0g     RACENONW   DUMMY VARIABLE: RACE NONWHITE
alone           double  %12.0g     ALONE      DUMMY VARIABLE: ALONE
```

```
groupgt3        double  %12.0g     GROUPGT3   DUMMY VARIABLE: GROUP > 3
singlew         double  %12.0g     SINGLEW    DUMMY VARIABLE: SINGLE WOMAN
sexmale         double  %12.0g     SEXMALE    DUMMY VARIABLE: MALE
wkdayam         double  %12.0g     WKDAYAM    DUMMY VARIABLE: WEEKDAY AM
wkdaynoo        double  %12.0g     WKDAYNOO   DUMMY: WEEKDAY NOON
wkdayaft        double  %12.0g     WKDAYAFT   DUMMY: WEEKDAY AFTERNOON
wkdayrus        double  %12.0g     WKDAYRUS   DUMMY: WEEKDAY RUSH HOURS
satmidda        double  %12.0g     SATMIDDA   DUMMY: SATURDAY MIDDAY
wkndnite        double  %12.0g     WKNDNITE   DUMMY: WEEKEND NIGHT
child           double  %12.0g     CHILD      DUMMY: CHILD
teen            double  %12.0g     TEEN       DUMMY: TEEN
adult           double  %12.0g     ADULT      DUMMY: ADULT
senior          double  %12.0g     SENIOR     DUMMY: SENIOR
nonpurps        double  %12.0g     NONPURPS   DUMMY: NONPURPOSEFUL
mngroup         double  %12.0g                AVERAGE GROUP SIZE IN CENTER
maxgroup        double  %12.0g                LARGEST GROUP SEEN IN CENTER
-------------------------------------------------------------------------------
-------------------------------------------------------------
Sorted by:

.
. ***
. * make a white dummy variable
. gen whitedum=0

. replace whitedum=1 if(race==0)
(6,112 real changes made)

. replace whitedum=. if(race==.)
(128 real changes made, 128 to missing)

. tab whitedum race, missing

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

. label var whitedum "1 = white pedestrian 0 = other"

.
. ***
. * make a kid or teen pedestrian dummy variable
. gen kidrteen=0

. replace kidrteen=1 if(age<=1)
(1,289 real changes made)

. replace kidrteen=1 if age==.
(115 real changes made)

. tab kidrteen age, missing nolabel

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

```
-----------+---------------------------------------------------------------+----------
     Total |       579        710      4,998        694        115 |     7,096

. label var kidrteen "1 = kid or teen 0 = other"

.
. ***
. * looking at the raw relationship
. * in table form
. tab primbiz kidrteen, col lrchi

+--------------------+
| Key                |
|--------------------|
|     frequency      |
| column percentage  |
+--------------------+

     DUMMY |
 VARIABLE: |  1 = kid or teen 0 =
BIZ/SERVIC |         other
         E |         0          1 |     Total
-----------+----------------------+----------
        No |     1,677        610 |     2,287
           |     29.46      43.45 |     32.23
-----------+----------------------+----------
       Yes |     4,015        794 |     4,809
           |     70.54      56.55 |     67.77
-----------+----------------------+----------
     Total |     5,692      1,404 |     7,096
           |    100.00     100.00 |    100.00

 likelihood-ratio chi2(1) =  97.2904   Pr = 0.000

.
. ***
. * some additional variables
.
. * centerco is the place variable - level 2 identifier
. * going to sort on that
. sort centerco

.
. * create a kidrteen variable that is just the commercial center averages
. * this is just the level 2 variation in this predictor
. by centerco: egen x_kidrteen=mean(kidrteen)

. label var x_kidrteen "SCC level proportion kid/teen pedestrians"

.
. ***
. * creating a centered version of x_kidrteen
. center x_kidrteen
(generated variables: c_x_kidrteen)

. label var c_x_kidrteen "overall centered version of SCC means on kidrteen"

.
. * create a curvilinear component of ecological kidrteen
. gen sq_x_kidrteen=c_x_kidrteen*c_x_kidrteen

. label var sq_x_kidrteen  "squared proportion teens at SCC level"

. corr sq_x_kidrteen c_x_kidrteen
(obs=7,096)
```

```
             | sq_x_k~n c_x_ki~n
-------------+------------------
sq_x_kidrt~n |   1.0000
c_x_kidrteen |   0.5089   1.0000


. graph twoway (scatter sq_x_kidrteen c_x_kidrteen)  (lfit sq_x_kidrteen c_x_kidrteen)

.
. * level 2 variation in the outcome
. * creating a level 2 variable
. by centerco: egen x_primbiz=mean(primbiz)

. label var x_primbiz "SCC level proportion pedestrians using a business or service"

.
. * create a kidrteen variable reflecting just within center variation
. * this is just the level 1 variation in this predictor
. by centerco: center kidrteen, gen(wi_kidrteen)
(generated variables: wi_kidrteen)

. label var wi_kidrteen "within center variation kidrteen"

.
. * do same for primbiz
. * this is just the level 1 variation in this outcome
. by centerco: center primbiz, gen(wi_primbiz)
(generated variables: wi_primbiz)

. label var wi_primbiz "within center variation primbiz"

.
. ***
. * look at descriptives for the two variables
. * raw form level 2 form level 1 form
. statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max
mean sd)

                      n         min         max        mean          sd
    primbiz        7096           0           1   .67770575    .4673879
   kidrteen        7096           0           1   .19785795   .39841254
  x_primbiz        7096   .27350429   .82894737   .67770575   .15404018
 x_kidrteen        7096   .06837607   .45833334   .19785795   .08047852
 wi_primbiz        7096  -.82894737   .72649574  -2.558e-09   .44127437
wi_kidrteen        7096  -.45833334   .93162394   3.370e-10   .39019964

.
. ***
. * save updated unit level file
. save msp_beh_obs_v_dd.dta, replace
file msp_beh_obs_v_dd.dta saved

.
. **********************
. * additional data processing
. * END
. **********************
.
. **********************
. * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
. * START
. **********************
.
. collapse (mean) x_alone=alone x_whited=whitedum ///
>                 x_prbiz=primbiz ///
>                 x_child=child ///
```

```
>                 x_teen=teen ///
>                 x_kidrteen=kidrteen ///
>         (sd) sd_alone=alone sd_whited=whitedum ///
>         sd_prbiz=primbiz ///
>         , by(centerco)

.
. label var x_prbiz "center mean proportion primarily business users"

. label var x_child "center mean proportion children"

. label var x_teen "center mean proportion teens"

. label var x_kidrteen    "center mean proportion teens or children"

.
. * save collapsed file
. save msp_beh_obs_v_dd_collapse.dta, replace
file msp_beh_obs_v_dd_collapse.dta saved

.
. * add one more varuiabke to collapsed file and then re save
. clear all

. use msp_beh_obs_v_dd_collapse.dta, replace

. * going to create a group mean centered version of * center level kidrteen
. sort centerco

. by centerco: center x_kidrteen
(generated variables: c_x_kidrteen)

. label var c_x_kidrteen "center level centered kidrteen - by commerical area"

.
. * now create squared version of scc centered kidrteen
. gen sq_kidrteen=c_x_kidrteen*c_x_kidrteen

. label var sq_kidrteen "squared scc level centered kidrteen"

. graph twoway scatter  sq_kidrteen c_x_kidrteen

.
. * save
. save msp_beh_obs_v_ee_collapse.dta, replace
file msp_beh_obs_v_ee_collapse.dta saved

.
. **********************
. * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
. * END
. **********************
.
. **********************
. * merge collapsed SCC level file and unit level file
. * START
. **********************
. clear all

. use msp_beh_obs_v_dd.dta

. * do merge
. merge m:1 centerco using msp_beh_obs_v_ee_collapse.dta
(label CENTERCO already defined)

    Result                           # of obs.
```

```
    -----------------------------------------
    not matched                             0
    matched                             7,096  (_merge==3)
    -----------------------------------------

.
. * save merged file
. notes: v dd has center mean and sd variables on some things

. save msp_beh_obs_v_ee.dta, replace
file msp_beh_obs_v_ee.dta saved

.
. **********************
. * merge collapsed SCC level file and unit level file
. * END
. **********************
.
. **********************
. * looking at bivariate relationships
. *       at both pedestrian and center level
. *       between key predictor - child or teen pedestrian
. *       and key outcome - primarily business user
. * START
. **********************
.
. * look at pedestrian level link between kidrteen and primbiz
. clear all

. use msp_beh_obs_v_ee.dta

. tab primbiz kidrteen, col lrchi

+--------------------+
| Key                |
|--------------------|
|     frequency      |
| column percentage  |
+--------------------+

     DUMMY |
 VARIABLE: |  1 = kid or teen 0 =
BIZ/SERVIC |         other
         E |         0          1 |     Total
-----------+----------------------+----------
        No |     1,677        610 |     2,287
           |     29.46      43.45 |     32.23
-----------+----------------------+----------
       Yes |     4,015        794 |     4,809
           |     70.54      56.55 |     67.77
-----------+----------------------+----------
     Total |     5,692      1,404 |     7,096
           |    100.00     100.00 |    100.00

 likelihood-ratio chi2(1) =  97.2904   Pr = 0.000

.
. * let's look at center level connection between kidrteen and primbiz
. clear all

. use  msp_beh_obs_v_ee_collapse.dta, replace

. sort x_kidrteen

. list x_kidrteen centerco
```

```
      +-------------------------+
      | x_kidr~n       centerco |
      |-------------------------|
   1. | .0683761   15th and Nic |
   2. | .1026253   Selby and We |
   3. | .1138614   Como and 15t |
   4. | .1258278   Randolph and |
   5. | .1311475   54th and Nic |
      |-------------------------|
   6. | .1519824   Grand and Fa |
   7. | .1656442   50th and Bry |
   8. |  .171875   38th and 23r |
   9. |   .18429    Johnson and |
  10. | .1847134   38th and Gra |
      |-------------------------|
  11. | .1854103   Marshall and |
  12. | .1860465   48th and Chi |
  13. |  .202454   White Bear a |
  14. | .2089552   Grand and Ha |
  15. | .2091691   60th and Por |
      |-------------------------|
  16. | .2380952   54th and Chi |
  17. | .2425629   Randolph and |
  18. | .2577319   50th and Xer |
  19. | .2578125   Third and Ma |
  20. | .2697369   Thomas and H |
      |-------------------------|
  21. |  .269953   Baker and Sm |
  22. | .2807692   28th and 4th |
  23. | .3333333   Penn and Ced |
  24. | .4583333   38th and 4th |
      +-------------------------+

. tab centerco, nolabel

      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
```

```
. tab centerco

    SMALL COMMERCIAL CENTER |
                       CODE |      Freq.     Percent        Cum.
----------------------------+-----------------------------------
White Bear and Sherwood StP |          1        4.17        4.17
     Thomas and Hamline StP |          1        4.17        8.33
 Marshall and Cleveland StP |          1        4.17       12.50
     Grand and Fairview StP |          1        4.17       16.67
      Grand and Hamline StP |          1        4.17       20.83
          Selby and Western |          1        4.17       25.00
   Randolph and Hamline StP |          1        4.17       29.17
    Randolph and Milton StP |          1        4.17       33.33
        Baker and Smith StP |          1        4.17       37.50
        Third and Maria StP |          1        4.17       41.67
   Penn and Cedar Lake Mpls |          1        4.17       45.83
       50th and Xerxes Mpls |          1        4.17       50.00
       50th and Bryant Mpls |          1        4.17       54.17
        38th and Grand Mpls |          1        4.17       58.33
      48th and Chicago Mpls |          1        4.17       62.50
      54th and Chicago Mpls |          1        4.17       66.67
     54th and Nicollet Mpls |          1        4.17       70.83
     60th and Portland Mpls |          1        4.17       75.00
         38th and 23rd Mpls |          1        4.17       79.17
     15th and Nicollet Mpls |          1        4.17       83.33
         Como and 15th Mpls |          1        4.17       87.50
      Johnson and 29th Mpls |          1        4.17       91.67
          28th and 4th Mpls |          1        4.17       95.83
          38th and 4th Mpls |          1        4.17      100.00
----------------------------+-----------------------------------
                      Total |         24      100.00

. list x_kidrteen if(centerco!=990)

     +----------+
     | x_kidr~n |
     |----------|
  1. | .0683761 |
  2. | .1026253 |
  3. | .1138614 |
  4. | .1258278 |
  5. | .1311475 |
     |----------|
  6. | .1519824 |
  7. | .1656442 |
  8. |  .171875 |
  9. |   .18429 |
 10. | .1847134 |
     |----------|
 11. | .1854103 |
 12. | .1860465 |
 13. |  .202454 |
 14. | .2089552 |
 15. | .2091691 |
     |----------|
 16. | .2380952 |
 17. | .2425629 |
 18. | .2577319 |
 19. | .2578125 |
 20. | .2697369 |
     |----------|
 21. |  .269953 |
 22. | .2807692 |
 23. | .3333333 |
     +----------+
```

```
.
. * level 2  SCC level relationship
. * all SCCs
. graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen)|| (qfit
x_prbiz x_kidrteen )

. graph save x_prbiz_x_kidrteen.gph, replace
(file x_prbiz_x_kidrteen.gph saved)

.
. * same graph without 38th and 4th
. graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen)|| (qfit
x_prbiz x_kidrteen ) if(centerco!=990)

. graph save x_prbiz_x_kidrteen_lt_minus_990.gph, replace
(file x_prbiz_x_kidrteen_lt_minus_990.gph saved)

.
. ************************
. * looking at bivariate relationships
. *       at both pedestrian and center level
. *       between key predictor - child or teen pedestrian
. *       and key outcome - primarily business user
. * END
. ************************
.
. ********************************************************************************
. *
. *
. *       ON TO THE MONOLEVEL AND MIXED MODELS
. *
. *
. ********************************************************************************
.
. ************************
. * descriptives
. *       look at descriptives for the two variables
. *       raw form level 2 form level 1 form
. * begin
. ************************
.
. clear all

. use msp_beh_obs_v_ee.dta

. statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max
mean sd)

                      n         min         max        mean          sd
    primbiz        7096           0           1   .67770575    .4673879
   kidrteen        7096           0           1   .19785795   .39841254
  x_primbiz        7096   .27350429   .82894737   .67770575   .15404018
 x_kidrteen        7096   .06837607   .45833334   .19785795   .08047852
 wi_primbiz        7096  -.82894737   .72649574  -2.558e-09   .44127437
wi_kidrteen        7096  -.45833334   .93162394   3.370e-10   .39019964

.
. ************************
. * descriptives
. *       look at descriptives for the two variables
. *       raw form level 2 form level 1 form
. * end
. ************************
.
. ************************
. * ANOVA model
```

```
. * begin
. **********************
. ***
. *               monolevel
. logit primbiz , or

Iteration 0:   log likelihood = -4460.4514
Iteration 1:   log likelihood = -4460.4514

Logistic regression                                     Number of obs     =      7,096
                                                        LR chi2(0)        =       0.00
                                                        Prob > chi2       =          .
Log likelihood = -4460.4514                             Pseudo R2         =     0.0000

------------------------------------------------------------------------------
     primbiz |       Odds   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       _cons |   2.102755   .0534115    29.26   0.000     2.000633    2.210089
------------------------------------------------------------------------------

.
. ***
. *               mixed effects
. melogit primbiz || centerco: , or

Fitting fixed-effects model:

Iteration 0:   log likelihood = -4471.6478
Iteration 1:   log likelihood = -4460.4579
Iteration 2:   log likelihood = -4460.4514
Iteration 3:   log likelihood = -4460.4514

Refining starting values:

Grid node 0:   log likelihood = -4135.6044

Fitting full model:

Iteration 0:   log likelihood = -4135.6044  (not concave)
Iteration 1:   log likelihood = -4133.0374
Iteration 2:   log likelihood = -4132.4008
Iteration 3:   log likelihood = -4132.3053
Iteration 4:   log likelihood = -4132.2865
Iteration 5:   log likelihood = -4132.2865

Mixed-effects logistic regression               Number of obs     =      7,096
Group variable:        centerco                 Number of groups  =         24

                                                Obs per group:
                                                              min =        132
                                                              avg =      295.7
                                                              max =        512

Integration method: mvaghermite                 Integration pts.  =          7

                                                Wald chi2(0)      =          .
Log likelihood = -4132.2865                     Prob > chi2       =          .
------------------------------------------------------------------------------
     primbiz |       Odds   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       _cons |   2.070114   .2795805     5.39   0.000     1.588674    2.697453
-------------+----------------------------------------------------------------
centerco     |
   var(_cons)|    .417968   .1258118                      .2316991    .7539832
------------------------------------------------------------------------------
Note: Estimates are transformed only in the first equation.
```

```
LR test vs. logistic model: chibar2(01) = 656.33      Prob >= chibar2 = 0.0000

.
. ***
. * getting a measure of lack of fit
. estat ic

Akaike's information criterion and Bayesian information criterion

------------------------------------------------------------------------------
       Model |          N   ll(null)  ll(model)      df        AIC        BIC
-------------+----------------------------------------------------------------
           . |      7,096          .  -4132.287       2   8268.573   8282.308
------------------------------------------------------------------------------
Note: BIC uses N = number of observations. See [R] BIC note.

.
. ***
. * getting proportion of outcome at level 2
. estat icc

Intraclass correlation

------------------------------------------------------------------------------
                       Level |        ICC   Std. Err.     [95% Conf. Interval]
-----------------------------+------------------------------------------------
                    centerco |   .1127256   .0301064      .0657943    .1864518
------------------------------------------------------------------------------

.
. ***
. * now predicting eb means for primbiz at commercial center level
. predict pred_biz
(option mu assumed)
(predictions based on fixed effects and posterior means of random effects)
(using 7 quadrature points)

. label var pred_biz "eb_mean_predicted prim_biz"

.
. ***
. * graph eb means prim_biz versus center means
. * shows eb adjustments
. graph bar x_primbiz pred_biz, over(centerco, sort(1))

. graph save bar_x_prim_biz_pred_biz.gph, replace
(file bar_x_prim_biz_pred_biz.gph saved)

. *
. * went in and made adjustments to graph
. *
. * saved as revised
. * appears in text
. *
. ***
. * getting descriptive statistics on raw and EB adjusted means
. summ x_primbiz pred_biz

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
   x_primbiz |      7,096    .6777058    .1540402   .2735043   .8289474
    pred_biz |      7,096    .6782293    .1497207    .281558   .8233974

.
. ***
. * saving the file
```

```
. notes: v ee has predicted outcome score from anova

. save msp_beh_obs_v_ee.dta, replace
file msp_beh_obs_v_ee.dta saved

.
. **********************
. * ANOVA model
. * end
. **********************
.
. **********************
. * looking at effects of age mix on primarily business/service user
. * begin
. **********************
. ***
. * plain logit monolevel
. logit primbiz kidrteen, or

Iteration 0:   log likelihood = -4460.4514
Iteration 1:   log likelihood = -4412.0111
Iteration 2:   log likelihood = -4411.8062
Iteration 3:   log likelihood = -4411.8062

Logistic regression                               Number of obs     =      7,096
                                                  LR chi2(1)        =      97.29
                                                  Prob > chi2       =     0.0000
Log likelihood = -4411.8062                       Pseudo R2         =     0.0109

------------------------------------------------------------------------------
     primbiz | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    kidrteen |   .5436735   .0332671    -9.96   0.000     .4822293    .6129468
       _cons |   2.394156   .0696106    30.03   0.000     2.261537    2.534553
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.

.
. ***
. * multilevel - raw variable
. melogit primbiz kidrteen ||centerco: , or

Fitting fixed-effects model:

Iteration 0:   log likelihood = -4421.5383
Iteration 1:   log likelihood = -4411.8138
Iteration 2:   log likelihood = -4411.8062
Iteration 3:   log likelihood = -4411.8062

Refining starting values:

Grid node 0:   log likelihood = -4074.8634

Fitting full model:

Iteration 0:   log likelihood = -4074.8634  (not concave)
Iteration 1:   log likelihood = -4072.3777
Iteration 2:   log likelihood = -4070.2591
Iteration 3:   log likelihood = -4069.7245
Iteration 4:   log likelihood = -4069.7242

Mixed-effects logistic regression               Number of obs     =      7,096
Group variable:        centerco                 Number of groups  =         24

                                                Obs per group:
                                                              min =        132
```

```
                                                              avg =      295.7
                                                              max =        512

Integration method: mvaghermite                 Integration pts.  =          7

                                                Wald chi2(1)      =     127.24
Log likelihood = -4069.7242                     Prob > chi2       =     0.0000
------------------------------------------------------------------------------
     primbiz | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    kidrteen |   .4758117   .0313298   -11.28   0.000     .4182036    .5413555
       _cons |   2.448267    .340962     6.43   0.000     1.863437    3.216642
-------------+----------------------------------------------------------------
centerco     |
   var(_cons)|   .4392137   .1320998                      .243593    .7919304
------------------------------------------------------------------------------
Note: Estimates are transformed only in the first equation.
Note: _cons estimates baseline odds (conditional on zero random effects).
LR test vs. logistic model: chibar2(01) = 684.16      Prob >= chibar2 = 0.0000

.
. ***
. * multilevel - level 1 and level 2 impacts separated
. melogit primbiz x_kidrteen  wi_kidrteen ||centerco: , or

Fitting fixed-effects model:

Iteration 0:   log likelihood = -4408.7516
Iteration 1:   log likelihood = -4399.5599
Iteration 2:   log likelihood = -4399.5529
Iteration 3:   log likelihood = -4399.5529

Refining starting values:

Grid node 0:   log likelihood = -4073.2452

Fitting full model:

Iteration 0:   log likelihood = -4073.2452  (not concave)
Iteration 1:   log likelihood = -4070.7633
Iteration 2:   log likelihood = -4069.7349
Iteration 3:   log likelihood = -4069.5613
Iteration 4:   log likelihood = -4069.5604
Iteration 5:   log likelihood = -4069.5604

Mixed-effects logistic regression               Number of obs     =      7,096
Group variable:        centerco                 Number of groups  =         24

                                                Obs per group:
                                                              min =        132
                                                              avg =      295.7
                                                              max =        512

Integration method: mvaghermite                 Integration pts.  =          7

                                                Wald chi2(2)      =     127.59
Log likelihood = -4069.5604                     Prob > chi2       =     0.0000
------------------------------------------------------------------------------
     primbiz | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  x_kidrteen |   1.251499   2.109414     0.13   0.894     .0459961    34.05176
 wi_kidrteen |   .4751237    .031304   -11.29   0.000     .4175654    .5406161
       _cons |   2.002191   .7540281     1.84   0.065     .9570661    4.188604
-------------+----------------------------------------------------------------
centerco     |
   var(_cons)|   .4332071    .130344                      .2402065    .7812793
```

```
------------------------------------------------------------------------------
Note: Estimates are transformed only in the first equation.
Note: _cons estimates baseline odds (conditional on zero random effects).
LR test vs. logistic model: chibar2(01) = 659.98      Prob >= chibar2 = 0.0000

.
. ***
. * multilevel - level 1 and level 2 impacts separated
. * linear and curvilinear impacts of level 2 kidrteen
. melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: , or

Fitting fixed-effects model:

Iteration 0:   log likelihood = -4230.9596
Iteration 1:   log likelihood = -4225.2565
Iteration 2:   log likelihood = -4225.2524
Iteration 3:   log likelihood = -4225.2524

Refining starting values:

Grid node 0:   log likelihood = -4070.9567

Fitting full model:

Iteration 0:   log likelihood = -4070.9567  (not concave)
Iteration 1:   log likelihood = -4065.1802
Iteration 2:   log likelihood = -4064.4115
Iteration 3:   log likelihood = -4064.2696
Iteration 4:   log likelihood = -4064.2674
Iteration 5:   log likelihood = -4064.2674

Mixed-effects logistic regression               Number of obs     =      7,096
Group variable:        centerco                 Number of groups  =         24

                                                Obs per group:
                                                              min =        132
                                                              avg =      295.7
                                                              max =        512

Integration method: mvaghermite                 Integration pts.  =          7

                                                Wald chi2(3)      =     140.03
Log likelihood = -4064.2674                     Prob > chi2       =     0.0000
------------------------------------------------------------------------------
      primbiz | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
 c_x_kidrteen |   48.90201   82.13363     2.32   0.021     1.818388    1315.124
sq_x_kidrteen |   1.23e-16   1.23e-15    -3.66   0.000     3.70e-25    4.10e-08
  wi_kidrteen |   .4749693   .0312935   -11.30   0.000     .4174301    .5404397
        _cons |   2.584634   .3231313     7.60   0.000     2.022934    3.302299
--------------+---------------------------------------------------------------
centerco      |
    var(_cons)|   .2703844   .0838186                      .1472689    .4964234
------------------------------------------------------------------------------
Note: Estimates are transformed only in the first equation.
Note: _cons estimates baseline odds (conditional on zero random effects).
LR test vs. logistic model: chibar2(01) = 321.97      Prob >= chibar2 = 0.0000

. melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: ,

Fitting fixed-effects model:

Iteration 0:   log likelihood = -4230.9596
Iteration 1:   log likelihood = -4225.2565
Iteration 2:   log likelihood = -4225.2524
Iteration 3:   log likelihood = -4225.2524
```

```
Refining starting values:

Grid node 0:   log likelihood = -4070.9567

Fitting full model:

Iteration 0:   log likelihood = -4070.9567  (not concave)
Iteration 1:   log likelihood = -4065.1802
Iteration 2:   log likelihood = -4064.4115
Iteration 3:   log likelihood = -4064.2696
Iteration 4:   log likelihood = -4064.2674
Iteration 5:   log likelihood = -4064.2674

Mixed-effects logistic regression               Number of obs     =      7,096
Group variable:        centerco                 Number of groups  =         24

                                                Obs per group:
                                                              min =        132
                                                              avg =      295.7
                                                              max =        512

Integration method: mvaghermite                 Integration pts.  =          7

                                                Wald chi2(3)      =     140.03
Log likelihood = -4064.2674                     Prob > chi2       =     0.0000
------------------------------------------------------------------------------
      primbiz |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
 c_x_kidrteen |   3.889818   1.679555     2.32   0.021     .5979506    7.181686
sq_x_kidrteen |  -36.63349   10.01189    -3.66   0.000    -56.25642   -17.01055
  wi_kidrteen |  -.7445051   .0658854   -11.30   0.000    -.8736381   -.6153721
        _cons |    .949584   .1250201     7.60   0.000      .704549    1.194619
--------------+---------------------------------------------------------------
centerco      |
    var(_cons)|   .2703844   .0838186                      .1472689    .4964234
------------------------------------------------------------------------------
LR test vs. logistic model: chibar2(01) = 321.97      Prob >= chibar2 = 0.0000

.
. ************************
. * looking at effects of age mix on primarily business/service user
. * end
. ************************
.
. ************************
. * now create a collapsed file with observed and eb mean scores at center level
. * begin
. ************************
.
. collapse (mean) primbiz pred_biz  kidrteen  ///
>         , by(centerco)

.
. * save collapsed file
. save msp_beh_obs_v_ff_collapsed.dta, replace
(note: file msp_beh_obs_v_ff_collapsed.dta not found)
file msp_beh_obs_v_ff_collapsed.dta saved

. clear all

. use msp_beh_obs_v_ff_collapsed.dta

.
. ************************
. * now create a collapsed file with observed and eb mean scores at center level
```

```
. * end
. ***********************
.
. ***********************
. * further descriptive examinations
. * begin
. ***********************
.
. ***
. * list true means and eb adjusted means
. sort primbiz

. list centerco primbiz pred_biz

     +---------------------------------------+
     |     centerco       primbiz   pred_biz |
     |---------------------------------------|
  1. | 15th and Nic   .2735042735    .281558 |
  2. | 38th and 4th   .4318181818   .4403667 |
  3. | Randolph and   .4635761589    .476452 |
  4. | White Bear a    .527607362   .5363588 |
  5. | 38th and Gra   .5414012739   .5497446 |
     |---------------------------------------|
  6. | Selby and We    .584725537   .5870738 |
  7. | Grand and Ha   .5870646766   .5917415 |
  8. | 54th and Chi    .612244898   .6170647 |
  9. | Como and 15t   .6138613861   .6173654 |
 10. | Penn and Ced   .6212121212   .6259503 |
     |---------------------------------------|
 11. | 50th and Xer   .6288659794   .6308753 |
 12. | Third and Ma     .69140625    .691383 |
 13. | 28th and 4th   .6923076923    .692251 |
 14. | Baker and Sm   .6971830986   .6970399 |
 15. | 50th and Bry    .717791411   .7161223 |
     |---------------------------------------|
 16. | Marshall and   .7294832827   .7282733 |
 17. |  Johnson and   .7371601208    .735705 |
 18. | Grand and Fa    .781938326   .7797088 |
 19. | 38th and 23r         .8125   .8097192 |
 20. | 54th and Nic   .8196721311   .8165463 |
     |---------------------------------------|
 21. | 48th and Chi   .8226744186   .8181571 |
 22. | Randolph and    .823798627   .8201792 |
 23. | 60th and Por   .8280802292   .8233974 |
 24. | Thomas and H   .8289473684   .8185707 |
     +---------------------------------------+

.
. * looking at the level-2 relationship between young peds and biz peds.
.
. graph twoway (lowess primbiz kidrteen) || (scatter primbiz kidrteen)|| (qfit primbiz
kidrteen ) || (lfit primbiz kidrteen )

. graph save x_prbiz_x_kidrteen.gph, replace
(file x_prbiz_x_kidrteen.gph saved)

.
. * worked on graph to create revised version
.
. ***********************
. * further descriptive examinations
. * end
. ***********************
.
. log close
      name:  <unnamed>
```

```
      log:
      C:\PCW5\groff_2020\ICPSR_02371\DS0002\groff_handbook_2020_multilevel_006_REVISED.l
      og
  log type:  text
 closed on:  23 Feb 2021, 20:15:52
-------------------------------------------------------------------------------------------
-------------------------------------------------------------
```