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NOTE: This session is executing on the WIN_PRO platform.

```
1      options ls=120 ps=79 nodate;
2      ods noproctitle;
3      /*****\
4      Program:      c:\meps\prog\Example_L5.sas
5
6      Description:  This example shows how to:
7                    (1) Use condition file to identify events for asthma
8                    (2) Link conditions to events
9                    (3) Merge the condition-event linked file to event files
10                   (4) For each event, construct variables with the same name across events
11                   (5) Combine facility and doctor expenditures
12                   (6) Combine event files, identify type of event
13                   (7) Aggregate event-level records to person level
14
15      Input Files:  c:\meps\data\h61.sas7bdat (2001 Conditions)
16                   c:\meps\data\h59if1.sas7bdat (2001 Condition-Event Link File)
17                   c:\meps\data\h59a.sas7bdat (2001 Prescribed Medicines)
18                   c:\meps\data\h59e.sas7bdat (2001 Emergency Room Visits)
19                   c:\meps\data\h59f.sas7bdat (2001 Outpatient Visits)
20                   c:\meps\data\h59g.sas7bdat (2001 Office-Based Medical Provider Visits)
21                   c:\meps\data\h60.sas7bdat (2001 Full-Year Persons)
22      \*****/
23
24      libname hc 'c:\meps\data';
NOTE: Libref HC was successfully assigned as follows:
      Engine:      V8
      Physical Name: c:\meps\data
25
26      proc format;
27          value inscov
28              1='Any private'
29              2='Public only'
30              3='Uninsured';
NOTE: Format INSCOV has been output.
31          value $vistype
32              'ob'='Office-Based'
33              'op'='Outpatient'
34              'er'='Emergency'
35              'pm'='Drug Purchase';
NOTE: Format $VISTYPE has been output.
36          value age
37              0-4  ='0-4'
38              5-17='5-17'
39              18-24='18-24'
40              25-44='25-44'
41              45-64='45-64'
42              65-90='65-90';
NOTE: Format AGE has been output.
43          value sex 1='Male' 2='Female';
NOTE: Format SEX has been output.
44          value racethnx
```

```
45         1='Hispanic'  
46         2='Black, not Hispanic'  
47         3='Other';  
NOTE: Format RACETHNX has been output.  
48         run;
```

```
49  
50         title 'AHRQ MEPS DATA USERS WORKSHOP (LINKING) -- NOV/DEC 2004';  
51         title2 'Link 2001 Conditions and Event Files';  
52  
53         /* Identify Asthma conditions */  
54         data cond; set hc.h61(keep=condidx icd9codx dupersid where=(icd9codx='493'));  
55         by condidx;  
56         drop icd9codx;  
57         run;
```

```
NOTE: There were 1695 observations read from the data set HC.H61.  
WHERE icd9codx='493';
```

NOTE: The data set WORK.COND has 1695 observations and 2 variables.

```
58
59          /* Merge link file (CLNK) & CONDS by CONDIDX */
60      data condev;  merge
61          cond(in=a)
62          hc.h59ifl(in=b);  by condidx;
63          if a & b;          /* keep only records that are in both files */
64      run;
```

NOTE: There were 1695 observations read from the data set WORK.COND.
NOTE: There were 314599 observations read from the data set HC.H59IF1.
NOTE: The data set WORK.CONDEV has 7046 observations and 5 variables.

```
65          /* Sort by EVNTIDX for merges w/ event files */
66      proc sort nodupkey;  by evntidx;  run;
```

NOTE: 13 observations with duplicate key values were deleted.
NOTE: There were 7046 observations read from the data set WORK.CONDEV.
NOTE: The data set WORK.CONDEV has 7033 observations and 5 variables.

```
67
68          /* Prescribed medicines */
69      data h59a;  set hc.h59a(keep=rxxrecidx linkidx rxsf01x rxxp01x rename=(linkidx=evntidx));
70          by evntidx;
71      run;
```

NOTE: There were 277866 observations read from the data set HC.H59A.
NOTE: The data set WORK.H59A has 277866 observations and 4 variables.

```
72
73          /* Combine Conditions & Prescribed medicines */
74      data pm;  merge
75          condev(in=a)
76          h59a(in=b);  by evntidx;  if a & b;
77          ambtotev=rxxp01x;  /* construct expenditure variables */
78          ambfamev=rxf01x;
79      run;
```

NOTE: There were 7033 observations read from the data set WORK.CONDEV.
NOTE: There were 277866 observations read from the data set WORK.H59A.
NOTE: The data set WORK.PM has 9726 observations and 10 variables.

```
80
81          /* Aggregate PMED events to person level */
82      proc sort;  by dupersid;  run;
```

NOTE: There were 9726 observations read from the data set WORK.PM.
NOTE: The data set WORK.PM has 9726 observations and 10 variables.

```
83      data perpm;  set pm;  by dupersid;
84          if first.dupersid then do;
85              ambtotpd=0;
86              ambfampd=0;
```

```
87     end;
88     retain ambtotpd ambfampd;
89     ambtotpd = ambtotpd + ambtotev;
90     ambfampd = ambfampd + ambfamev;
91     if last.dupersid then output;
92     label
93         ambtotpd='Total Paid: Prescriptions'
94         ambfampd='Amount Paid by Family: Prescriptions';
95     keep dupersid ambtotpd ambfampd;
96     run;
```

NOTE: There were 9726 observations read from the data set WORK.PM.
NOTE: The data set WORK.PERPMED has 1306 observations and 3 variables.

```
97
98     /* Add person characteristics */
99     data pers1; merge
100         perpmed(in=a)
101         hc.h60(keep=dupersid inscov01 perwt01f); by dupersid; if a;
102     run;
```

NOTE: There were 1306 observations read from the data set WORK.PERPMED.
NOTE: There were 33556 observations read from the data set HC.H60.

NOTE: The data set WORK.PERS1 has 1306 observations and 5 variables.

```

103
104     title3
105     'Average Prescription Expenditures per Person, for Persons with Asthma -- Total and Paid by Family';
106     proc means mean maxdec=2;
107         class  inscov01;
108         format  inscov01 inscov.;
109         var  ambtotpd ambfampd;
110         weight  perwt01f;
111     run;

```

NOTE: There were 1306 observations read from the data set WORK.PERS1.

NOTE: The PROCEDURE MEANS printed page 1.

```

112
113
114         /* Merge Asthma Conditions w/ each event file          */
115         /* Construct expenditure variables, using same name across events */
116
117         /* Office-based */
118     proc sort data=hc.h59g(keep=evntidx obxp01x obsf01x) out=h59g;  by evntidx;  run;

```

NOTE: There were 147490 observations read from the data set HC.H59G.

NOTE: The data set WORK.H59G has 147490 observations and 3 variables.

```

119     data ob;  merge
120         condev(in=a)
121         h59g(in=b);  by evntidx;  if a & b;
122         /* construct expenditure variables */
123         ambtotev=obxp01x;
124         ambfamev=obsf01x;
125     run;

```

NOTE: There were 7033 observations read from the data set WORK.CONDEV.

NOTE: There were 147490 observations read from the data set WORK.H59G.

NOTE: The data set WORK.OB has 2296 observations and 9 variables.

```

126
127         /* Outpatient */
128     proc sort data=hc.h59f(keep=evntidx opxp01x opfsf01x opdsf01x) out=h59f;
129         by evntidx;
130     run;

```

NOTE: There were 16274 observations read from the data set HC.H59F.

NOTE: The data set WORK.H59F has 16274 observations and 4 variables.

```

131     data op;  merge
132         condev(in=a)
133         h59f(in=b);  by evntidx;  if a & b;
134         /* construct expenditure variables */
135         ambtotev=opxp01x;
136         ambfamev=sum(opfsf01x,opdsf01x);          /* combine facility & doctor amounts */
137     run;

```

NOTE: There were 7033 observations read from the data set WORK.CONDEV.
NOTE: There were 16274 observations read from the data set WORK.H59F.
NOTE: The data set WORK.OP has 109 observations and 10 variables.

```
138  
139           /* Emergency room */  
140   proc sort data=hc.h59e(keep=evntidx erxp01x erfsf01x erdsf01x) out=h59e;  
141     by evntidx;  
142   run;
```

NOTE: There were 6444 observations read from the data set HC.H59E.
NOTE: The data set WORK.H59E has 6444 observations and 4 variables.

```
143   data er; merge  
144     condev(in=a)  
145     h59e(in=b); by evntidx; if a & b;  
146     /* construct expenditure variables */  
147     ambtottev=erxp01x;  
148     ambfamev=sum(erfsf01x,erdsf01x); /* combine facility & doctor amounts */  
149   run;
```

NOTE: There were 7033 observations read from the data set WORK.CONDEV.

NOTE: There were 6444 observations read from the data set WORK.H59E.
 NOTE: The data set WORK.ER has 178 observations and 10 variables.

```

150
151           /* Combine 4 event files */
152   data allevnt;  set
153       ob(in=a)
154       op(in=b)
155       er(in=c)
156       pm(in=d);  by evntidx;
157           /* use temporary 'in=' variables to define type of visit or purchase */
158   if a then vistype='ob';
159       else if b then vistype='op';
160       else if c then vistype='er';
161       else if d then vistype='pm';
162   run;

```

NOTE: There were 2296 observations read from the data set WORK.OB.
 NOTE: There were 109 observations read from the data set WORK.OP.
 NOTE: There were 178 observations read from the data set WORK.ER.
 NOTE: There were 9726 observations read from the data set WORK.PM.
 NOTE: The data set WORK.ALLEVNT has 12309 observations and 19 variables.

```

163
164   title3 'Frequency of Ambulatory Visits for Asthma, by Type of Event';
165   proc freq data=allevnt;  tables vistype/missing;  format vistype $vistype.;  run;

```

NOTE: There were 12309 observations read from the data set WORK.ALLEVNT.
 NOTE: The PROCEDURE FREQ printed page 2.

```

166
167           /* aggregate events to person level */
168
169   proc sort data=allevnt;  by dupersid;  run;

```

NOTE: There were 12309 observations read from the data set WORK.ALLEVNT.
 NOTE: The data set WORK.ALLEVNT has 12309 observations and 19 variables.

```

170   data perev;  set allevnt;  by dupersid;
171   if first.dupersid then do;
172       ambtotpd=0;  ambfampd=0;
173   end;
174   ambtotpd + ambtotev;
175   ambfampd + ambfamev;
176   if last.dupersid;
177   label
178       ambtotpd='Total Paid, Ambulatory Care for Asthma'
179       ambfampd='Amt Paid by Fam, Ambul'y Care for Asthma';
180   keep dupersid ambtotpd ambfampd;
181   run;

```

NOTE: There were 12309 observations read from the data set WORK.ALLEVNT.
 NOTE: The data set WORK.PEREV has 1402 observations and 3 variables.

```
182
183          /* Add person characteristics */
184 data pers; merge
185     perev(in=a)
186     hc.h60(keep=dupersid perwt01f age31x age42x age53x sex racethnx);
187     by dupersid; if a;
188     /* construct latest age from round-specific vars */
189     if age53x >= 0 then age=age53x;
190     else if age42x >= 0 then age=age42x;
191     else if age31x >= 0 then age=age31x;
192 run;
```

NOTE: There were 1402 observations read from the data set WORK.PEREV.

NOTE: There were 33556 observations read from the data set HC.H60.

NOTE: The data set WORK.PERS has 1402 observations and 10 variables.

```
193
194 title3 'Average Expenditures per Person -- Total and Paid by Family';
195 proc means data=pers mean maxdec=2;
196     class age racethnx sex;
197     format age age. racethnx racethnx. sex sex.;
198     var ambtotpd ambfampd;
199     weight perwt01f;
```


5

The SAS System

200 run;

NOTE: There were 1402 observations read from the data set WORK.PERS.

NOTE: The PROCEDURE MEANS printed pages 3-4.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

Link 2001 Conditions and Event Files

Average Prescription Expenditures per Person, for Persons with Asthma -- Total and Paid by Family

HEALTH INSURANCE COVERAGE INDICATOR				
01	N	Variable	Label	Mean
Any private	798	ambtotpd	Total Paid: Prescriptions	430.99
		ambfampd	Amount Paid by Family: Prescriptions	139.11
Public only	420	ambtotpd	Total Paid: Prescriptions	407.35
		ambfampd	Amount Paid by Family: Prescriptions	142.31
Uninsured	88	ambtotpd	Total Paid: Prescriptions	494.28
		ambfampd	Amount Paid by Family: Prescriptions	480.32

AHRQ MEPS DATA USERS WORKSHOP (LINKING) -- NOV/DEC 2004
Link 2001 Conditions and Event Files
Frequency of Ambulatory Visits for Asthma, by Type of Event

vistype	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Emergency	178	1.45	178	1.45
Office-Based	2296	18.65	2474	20.10
Outpatient	109	0.89	2583	20.98
Drug Purchase	9726	79.02	12309	100.00

AHRQ MEPS DATA USERS WORKSHOP (LINKING) -- NOV/DEC 2004
 Link 2001 Conditions and Event Files
 Average Expenditures per Person -- Total and Paid by Family

3

age	RACE/ETHNICITY (EDITED/IMPUTED)	SEX	N Obs	Variable	Label	Mean
0-4	Hispanic	Male	23	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	227.69 18.75
		Female	14	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	291.67 46.70
	Black, not Hispanic	Male	24	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	274.91 32.40
		Female	14	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	747.28 130.60
	Other	Male	34	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	353.33 99.57
		Female	16	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	217.43 70.44
5-17	Hispanic	Male	70	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	442.97 129.76
		Female	35	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	524.92 150.18
	Black, not Hispanic	Male	61	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	444.02 93.41
		Female	35	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	349.65 113.94
	Other	Male	136	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	404.17 132.32
		Female	98	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	393.35 99.70
18-24	Hispanic	Male	9	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	406.75 28.20
		Female	19	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	391.72 182.07
	Black, not Hispanic	Male	11	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	302.50 135.38
		Female	14	ambtotpd ambfampd	Total Paid, Ambulatory Care for Asthma Amt Paid by Fam, Ambul'y Care for Asthma	350.23 64.44
	Other	Male	26	ambtotpd	Total Paid, Ambulatory Care for Asthma	463.54

			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	106.67
	Female	22	ambtotpd	Total Paid, Ambulatory Care for Asthma	339.92
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	108.53
25-44	Hispanic				
	Male	17	ambtotpd	Total Paid, Ambulatory Care for Asthma	216.07
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	88.50
	Female	30	ambtotpd	Total Paid, Ambulatory Care for Asthma	435.42
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	104.62
	Black, not Hispanic				
	Male	8	ambtotpd	Total Paid, Ambulatory Care for Asthma	307.32
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	133.20
	Female	39	ambtotpd	Total Paid, Ambulatory Care for Asthma	663.44
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	134.14
	Other				
	Male	53	ambtotpd	Total Paid, Ambulatory Care for Asthma	579.98
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	156.36
	Female	118	ambtotpd	Total Paid, Ambulatory Care for Asthma	621.72
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	133.08

AHRQ MEPS DATA USERS WORKSHOP (LINKING) -- NOV/DEC 2004
 Link 2001 Conditions and Event Files
 Average Expenditures per Person -- Total and Paid by Family

4

age	RACE/ETHNICITY (EDITED/IMPUTED)	SEX	N Obs	Variable	Label	Mean	
45-64	Hispanic	Male	9	ambtotpd	Total Paid, Ambulatory Care for Asthma	726.52	
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	282.84	
		Black, not Hispanic	Female	41	ambtotpd	Total Paid, Ambulatory Care for Asthma	711.85
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	126.06	
		Other	Male	10	ambtotpd	Total Paid, Ambulatory Care for Asthma	214.41
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	40.87	
		Black, not Hispanic	Female	31	ambtotpd	Total Paid, Ambulatory Care for Asthma	916.88
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	208.04	
		Other	Male	74	ambtotpd	Total Paid, Ambulatory Care for Asthma	708.01
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	177.29	
	Other	Female	138	ambtotpd	Total Paid, Ambulatory Care for Asthma	1027.08	
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	358.86		
65-90	Hispanic	Male	3	ambtotpd	Total Paid, Ambulatory Care for Asthma	173.38	
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	14.60	
		Black, not Hispanic	Female	13	ambtotpd	Total Paid, Ambulatory Care for Asthma	848.75
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	277.86	
		Black, not Hispanic	Male	10	ambtotpd	Total Paid, Ambulatory Care for Asthma	983.85
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	309.81	
		Other	Female	14	ambtotpd	Total Paid, Ambulatory Care for Asthma	786.95
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	121.25	
		Other	Male	40	ambtotpd	Total Paid, Ambulatory Care for Asthma	1027.72
				ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	275.98	
	Other	Female	93	ambtotpd	Total Paid, Ambulatory Care for Asthma	745.34	
			ambfampd	Amt Paid by Fam, Ambul'y Care for Asthma	362.21		