

**MEPS HC-188I:
Appendix to MEPS 2016 Event Files
HC-188A - HC-188H
August 2018**

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A. Data Use Agreement

Individual identifiers have been removed from the micro-data contained in these files. Nevertheless, under sections 308 (d) and 903 (c) of the Public Health Service Act (42 U.S.C. 242m and 42 U.S.C. 299 a-1), data collected by the Agency for Healthcare Research and Quality (AHRQ) and/or the National Center for Health Statistics (NCHS) may not be used for any purpose other than for the purpose for which they were supplied; any effort to determine the identity of any reported cases is prohibited by law.

Therefore in accordance with the above referenced Federal Statute, it is understood that:

1. No one is to use the data in this data set in any way except for statistical reporting and analysis; and
2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and
3. No one will attempt to link this data set with individually identifiable records from any data sets other than the Medical Expenditure Panel Survey or the National Health Interview Survey. Furthermore, linkage of the Medical Expenditure Panel Survey and the National Health Interview Survey may not occur outside the AHRQ Data Center, NCHS Research Data Center (RDC) or the U.S. Census RDC network.

By using these data you signify your agreement to comply with the above stated statutorily based requirements with the knowledge that deliberately making a false statement in any matter within the jurisdiction of any department or agency of the Federal Government violates Title 18 part 1 Chapter 47 Section 1001 and is punishable by a fine of up to \$10,000 or up to 5 years in prison.

The Agency for Healthcare Research and Quality requests that users cite AHRQ and the Medical Expenditure Panel Survey as the data source in any publications or research based upon these data.

B. Background

1.0 Household Component

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic characteristics, employment, access to care, and satisfaction with health care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey, which includes 5 Rounds of interviews covering 2 full calendar years, provides data for examining person level changes in selected variables such as expenditures, health insurance coverage, and health status. Using computer assisted personal interviewing (CAPI) technology, information about each household member is collected, and the survey builds on this information from interview to interview. All data for a sampled household are reported by a single household respondent.

The MEPS-HC was initiated in 1996. Each year a new panel of sample households is selected. Because the data collected are comparable to those from earlier medical expenditure surveys conducted in 1977 and 1987, it is possible to analyze long-term trends. Each annual MEPS-HC sample size is about 15,000 households. Data can be analyzed at either the person or event level. Data must be weighted to produce national estimates.

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population and reflects an oversample of Blacks and Hispanics. In 2006, the NHIS implemented a new sample design, which included Asian persons in addition to households with Black and Hispanic persons in the oversampling of minority populations. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

2.0 Medical Provider Component

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents can not accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visits, diagnosis and procedure codes, charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect drug detail information, including National Drug Code (NDC) and medicine name, as well as date filled and sources and amounts of payment. The MPC is not designed to yield national estimates. It is primarily used as an imputation source to supplement/replace household reported expenditure information.

3.0 Survey Management and Data Collection

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. Data are collected under contract with Westat, Inc. (MEPS HC) and Research Triangle Institute (MEPS MPC). Data sets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The National Center for Health Statistics (NCHS) provides consultation and technical assistance.

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the [MEPS website](#). Selected data can be analyzed through MEPSnet, an on-line interactive tool designed to give data users the capability to statistically analyze MEPS data in a menu-driven environment.

Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

C. Technical and Programming Information

1.0 General Information

This documentation describes the MEPS Public Use Release HC-188I, which is the Appendix to MEPS releases HC-188A through HC-188H. This release contains two data files, both of which are provided in ASCII (with related SAS, SPSS, and Stata programming statements and data user information) and SAS versions: 1) the condition-event link file; and 2) the prescribed medicines-event link file.

This documentation offers a brief overview of the content and structure of the files and the accompanying codebook. It contains the following sections:

- Data File Information
- Merging/Linking MEPS Data Files
- Sample SAS Jobs for Linking

For more information on MEPS HC survey design see T. Ezzati-Rice, et al., 1998-2007 and S. Cohen, 1996. For information on the MEPS MPC design, see S. Cohen, 1998. These reports, along with a copy of the survey instruments used to collect the information on this file, are available on the [MEPS website](#).

2.0 Data File Information

This public use data set consists of two data files containing variables for linkage of the MEPS 2016 event-level data files. File 1, the H188IF1 or CLNK file, is used for linking the MEPS Conditions file with the MEPS event files; File 2, the H188IF2 or RXLK file, is used for linking the MEPS prescribed medicines event file with other MEPS event files.

The CLNK file contains 6 variables and has a logical record length of 59 with an additional 2-byte carriage return/line feed at the end of each record. The RXLK file contains 6 variables and has a logical record length of 59 with an additional 2-byte carriage return/line feed at the end of each record.

2.1 Codebook Format

Each codebook describes an ASCII data set and provides the following programming identifiers for each variable:

Identifier	Description
Name	Variable name (maximum of 8 characters)
Description	Variable descriptor (maximum 40 characters)
Format	Number of bytes
Type	Type of data: numeric (indicated by NUM) or character (indicated by CHAR)

Start	Beginning column position of variable in record
End	Ending column position of variable in record

2.2 Variable Naming and Source

In general, variable names reflect the content of the variable, with an 8 character limitation. All variables contained on Files 1 and 2 were derived from the CAPI.

2.3 Contents of File 1: Condition-Event Link File (CLNK)

File 1 (H188IF1) or the CLNK file, contains the variables needed to link each record on the MEPS 2016 Conditions file, HC-190, with one or more records on the MEPS 2016 event files, HC-188A, and HC-188D through HC-188H. Section 3.0 contains additional information on completing this linkage.

The 8-character variable DUPERSID uniquely identifies each person represented on the file. There may be more than one record on the CLNK file for a specific DUPERSID value.

CONDIDX is the ID that uniquely identifies each condition for a person and corresponds to a unique record on the MEPS 2016 Conditions file, HC-190. There may be more than one record on the CLNK file for a specific CONDIDX value.

EVNTIDX is the 12-digit number that uniquely identifies each event for a person and corresponds to a unique record on one of the MEPS 2016 event files, HC-188B through HC-188H. (EVNTIDX is not included on the 2016 Prescribed Medicines event file, HC-188A; rather, on this file the variable for linking with EVNTIDX on the CLNK file is LINKIDX.) There may be more than one record on the CLNK file for a specific EVNTIDX value.

CLNKIDX is the 24-digit number that uniquely identifies each record on the CLNK file and is the combination of CONDIDX + EVNTIDX. There is just one record on this file for each value of CLNKIDX, i.e., each unique combination of CONDIDX + EVNTIDX.

The variable EVENTYPE indicates the type of event record identified by EVNTIDX, and has the following values:

- 1 = MVIS – office-based medical provider visit event contained on MEPS release HC-188G
- 2 = OPAT – outpatient department visit event contained on MEPS release HC-188F
- 3 = EROM – emergency room visit event contained on MEPS release HC-188E
- 4 = STAZ – inpatient hospital stay event contained on MEPS release HC-188D
- 7 = HVIS – home health visit event contained on MEPS release HC-188H
- 8 = PMED – prescribed medicines event contained on MEPS release HC-188A

PANEL is a constructed variable used to specify the panel number for the interview in which the condition was reported. PANEL will indicate either Panel 20 or Panel 21.

2.4 Contents of File 2: Prescribed Medicines-Event Link File (RXLK)

File 2 (H188IF2) or the RXLK file, contains the variables needed to link each record on the MEPS 2016 Prescribed Medicines file, HC-188A, with one or more records on the MEPS 2016 event files, HC-188B and HC-188D through HC-188G. Section 3.0 contains additional information on completing this linkage.

The 8-character variable DUPERSID uniquely identifies each person represented on the file. There may be more than one record on the RXLK file for a specific DUPERSID value.

EVNTIDX is the 12-digit number that uniquely identifies each event for a person and corresponds to a unique record on one of the MEPS 2016 event files, HC-188B through HC-188G. There may be more than one record on the RXLK file for a specific EVNTIDX value.

LINKIDX is the 12-digit number that identifies the record(s) on the prescribed medicines file, HC-188A that link to an event record. There may be more than one record on the RXLK file for a specific LINKIDX value, and there may be more than one record on the HC-188A file for a specific LINKIDX value.

RXLKIDX is the 24-digit number that uniquely identifies each record on the RXLK file, and is the combination of EVNTIDX + LINKIDX. There is just one record on this file for each value of RXLKIDX, i.e., each unique combination of EVNTIDX + LINKIDX.

The variable EVENTYPE indicates the type of event record identified by EVNTIDX, and has the following values:

- 1 = MVIS – office-based medical provider visit event contained on MEPS release HC-188G
- 2 = OPAT – outpatient department visit event contained on MEPS release HC-188F
- 3 = EROM – emergency room visit event contained on MEPS release HC-188E
- 4 = STAZ – inpatient hospital stay event contained on MEPS release HC-188D
- 5 = DVIS – dental visit event contained on MEPS release HC-188B

For 1996-2004, records for purchases of insulin and diabetic supplies in a round were included in the Other Medical Expenses event files. Beginning with the 2005 file, these records are not included in the Other Medical Expenses file because the expenditures have always been included in the Prescribed Medicines file. As a consequence, there are no records in this file where the variable EVENTYPE = 6, the value used in 1996-2004 to identify OMED type of event record.

PANEL is a constructed variable used to specify the panel number for the interview in which the condition was reported. PANEL will indicate either Panel 20 or Panel 21.

2.5 Medical Conditions Coding Changes

Note that, through FY2012 for conditions related to certain medical events, the ICD-9-CM codes on the Conditions file were also released in the Prescribed Medicines, Emergency Room Visits, Office-based Medical Provider Visits, Outpatient Department Visits, and Inpatient Hospital Stays Event Files. Starting in FY2013, ICD-9-CM condition and procedure codes variables were

released only on the Conditions file.

Beginning FY16, condition names are no longer coded to procedure codes, and ICD9PROX has been dropped from the conditions file. Also beginning in FY16, ICD-9-CM codes are no longer used and the variable ICD9CODX has been dropped from the conditions file. Medical conditions now are coded to ICD-10-CM codes (ICD10CDX). All Panel 20 Round 1 through Round 3 conditions originally coded to ICD-9-CM codes were assigned an ICD-10-CM equivalent for consistency within the conditions file. For more information on ICD-10-CM codes, see the HC-190 documentation.

3.0 Merging/Linking MEPS Data Files

This section provides information on using each of the two HC-188I files, RXLK and CLNK, to link with the files contained in MEPS releases HC-190 and HC-188A, HC-188B, and HC-188D through HC-188H. The linking procedure is described using several examples of deriving MEPS-based estimates. Also included in this section are several caveats related to using the RXLK and CLNK files.

3.1 Example A: Using the CLNK (HC-188IF1) and RXLK (HC-188IF2) Files with the Medical Conditions File (HC-190), the Prescribed Medicines and Office-Based Medical Provider Visits Event Files (HC-188A and HC-188G)

This example calculates the total expenditures for prescribed medicines associated with office-based medical provider visits for asthma, using these files: the Conditions file (HC-190), the CLNK file (HC-188IF1), the office-based medical provider visit event file (HC-188G), the RXLK file (HC-188IF2), and the prescribed medicines event file (HC-188A). It includes the following major steps:

1. From the HC-190 file, select only records with condition coded as asthma.
2. Use the CLNK file to obtain unique record IDs of events which are linked to each of the selected asthma condition records.
3. From the HC-188G file, select only records for non-telephone office-based medical provider visits for persons with a positive weight.
4. Using the selected record IDs obtained from the CLNK file, with the selected HC-188G records, identify only those visits which were for asthma.
5. Use the RXLK file with the selected visit records which were for asthma to obtain unique record IDs of prescribed medicine records from file HC-188A linked to those visits.
6. Using these record IDs, obtain the linked records from the HC-188A file and calculate the weighted mean of the expenditure variable.

Attachment 1 contains a copy of the SAS job for this example.

3.2 Example B: Using the CLNK File (HC-188IF1) with the Medical Conditions File (HC-190) and the Prescribed Medicines Event File (HC-188A)

This example calculates the total expenditure for prescribed medicines associated with asthma, using the Conditions file (HC-190), the CLNK file (HC-188IF1) and the prescribed medicines event file (HC-188A). It includes the following major steps:

1. From the HC-190 file, select only records with condition coded as asthma.
2. Use the CLNK file to obtain unique record IDs of events which are linked to each of the asthma condition records.
3. Using these record IDs, obtain linked records from the HC-188A file and calculate the weighted mean of the expenditure variable.

Attachment 1 contains a copy of the SAS job for this example.

3.3 Example C: Using the CLNK File (HC-188IF1) with the Medical Conditions File (HC-190) and Office-Based Medical Provider Visits Event File (HC-188G)

This example calculates the total expenditures for office-based medical provider visits associated with asthma, using the Conditions file (HC-190), the CLNK file (HC-188IF1) and the office-based medical provider visits event file (HC-188G). It includes the following major steps:

1. From the HC-190 file, select only records with condition coded as asthma.
2. Use the CLNK file to obtain unique record IDs of events which are linked to each of the asthma condition records.
3. From the HC-188G file, select only records for non-telephone office-based medical provider visits for persons with a positive weight.
4. Using the selected record IDs obtained from the CLNK file, with the selected HC-188G records, identify only those visits which were for asthma and calculate the weighted mean of the expenditure variable.

Attachment 1 contains a copy of the SAS job for this example.

3.4 Limitations/Caveats of the CLNK File

When using the CLNK file, analysts should keep in mind that (1) conditions are self-reported and (2) there may be multiple conditions associated with an event. Users should also note that not all events link to the Conditions file.

3.5 Limitations/Caveats of the RXLK File

When using the RXLK file, analysts should keep in mind that one event record can link to more than one prescribed medicine record. Conversely, a prescribed medicine record may link to more than one event record in the same event file and/or more than one event record in other event files. When this occurs, it is up to the analyst to determine how the prescribed medicine expenditures should be allocated among those medical events.

3.6 National Health Interview Survey

Data from this file can be used alone or in conjunction with other files for different analytic purposes. Each MEPS panel can also be linked back to the previous years' National Health Interview Survey public use data files. For information on obtaining MEPS/NHIS link files please see the [MEPS](#) website.

3.7 Using MEPS Data for Trend Analysis

MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data; however, there are a variety of methodological and statistical considerations when examining trends over time using MEPS. Tests of statistical significance should be conducted to assess the likelihood that observed trends may be attributable to sampling variation. The length of time being analyzed should also be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution, unless they are attributable to known factors such as changes in public policy, economic conditions, or MEPS survey methodology. For example, as a result of improved methods for collecting priority conditions data implemented in 2007, prevalence measures prior to 2007 are not comparable to those from 2007 and beyond for many conditions. Users should refer to the documentation for the conditions file (HC-190) for details.

With respect to methodological considerations, in 2013 MEPS introduced an effort to obtain more complete information about health care utilization from MEPS respondents with full implementation in early 2014. This effort likely resulted in improved data quality and a reduction in underreporting in 2014, but could have some modest impact on analyses involving trends in utilization across years.

There are also statistical factors to consider in interpreting trend analyses. Looking at changes over longer periods of time can provide a more complete picture of underlying trends. Analysts may wish to consider using techniques to smooth or stabilize analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-97 versus 2011-12), working with moving averages or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time. Finally, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, undertaking numerous statistical significance tests of trends increases the likelihood of concluding that a change has taken place when one has not.

3.8 Longitudinal Analysis

Panel-specific longitudinal files are available for downloading in the data section of the MEPS Web site. For each panel, the longitudinal file comprises MEPS survey data obtained in Rounds 1 through 5 of the panel and can be used to analyze changes over a two-year period. Variables in the file pertaining to survey administration, demographics, employment, health status, disability days, quality of care, patient satisfaction, health insurance, and medical care use and expenditures were obtained from the MEPS full-year Consolidated files from the two years covered by that panel.

For more details or to download the data files, please see Longitudinal Data Files at the [AHRQ website](#).

Attachment 1:

Sample SAS Jobs for Linking Example

1

NOTE: Copyright (c) 2016 by SAS Institute Inc., Cary, NC, USA.

NOTE: SAS (r) Proprietary Software 9.4 (TS1M6)

NOTE: This session is executing on the X64_10PRO platform.

NOTE: SAS initialization used:

real time 0.50 seconds
cpu time 0.25 seconds

NOTE: AUTOEXEC processing beginning; file is C:\Program Files\SAS\SASMISC\autoexec_9464.sas.

NOTE: AUTOEXEC processing completed.

1
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```
ods rtf file = 'sampleA.rtf' ;
```

NOTE: Writing RTF Body file: sampleA.rtf

```
ods noproctitle;
```

```
OPTIONS LS=132 PS=59;
```

```
%let yr=16;
```

```
%let evntnum=188; /* BE SURE TO UPDTE FOR CURRENT FY */
```

```
%let condnum=190; /* BE SURE TO UPDTE FOR CURRENT FY */
```

```
TITLE1 "HC-&evntnum.I";
```

```
TITLE2 "Sample SAS Job for Example A";
```

```
LIBNAME IN "C:\Data";
```

NOTE: Libref IN was successfully assigned as follows:

Engine: V9
Physical Name: C:\Data

```
*****  
* Calculate the expenditures for prescribed medicines associated with medical visits for asthma.  
*****;
```

```

29 PROC FORMAT;
30 VALUE EVENTYPE
31 1 = "1 MVIS"
32 2 = "2 OPAT"
33 3 = "3 EROM"
34 4 = "4 STAZ"
35 5 = "5 DVIS"
36 6 = "6 OMED"
37 7 = "7 HVIS"
38 8 = "8 PMED";

```

NOTE: Format EVENTYPE has been output.

```

39
40 RUN;

```

NOTE: PROCEDURE FORMAT used (Total process time):

```

real time      0.02 seconds
cpu time       0.00 seconds

```

```

41
42 *-----
43 * Get condition records coded as asthma.
44 *-----;
45 DATA ASCONDS;
46 SET IN.H&condnum (KEEP=CONDIDX /*CCCODEX*/ ICD10CDX);
47 IF ICD10CDX = 'J45'
48 /*CCCODEX="128"*/;
49
50 RUN;

```

NOTE: There were 123100 observations read from the data set IN.H190.
NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.
NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.

NOTE: DATA statement used (Total process time):

```

real time      1.01 seconds
cpu time       0.00 seconds

```

```

51
52 *-----
53 * Get the events linked to each of the asthma condition records.
54 *-----;
55 PROC SORT DATA=ASCONDS; BY CONDIDX; RUN;

```

NOTE: There were 2288 observations read from the data set WORK.ASCONDS.
NOTE: SAS sort was used.
NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.
NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.

NOTE: PROCEDURE SORT used (Total process time):

```

real time      0.00 seconds
cpu time       0.00 seconds

```

```

56
57 proc print data=asconds (obs=50);

```

```

58     title3 "sample print of work.asconds - sorted by condidx";
59     title4 "COND (H&condnum) records where ICD10CDX = 'J45'";
60     run;

```

NOTE: There were 50 observations read from the data set WORK.ASCONDS.
NOTE: The PROCEDURE PRINT printed page 1.
NOTE: PROCEDURE PRINT used (Total process time):

real time	0.03 seconds
cpu time	0.03 seconds

```

61
62     PROC SORT DATA=IN.H&evntnum.IF1 OUT=CLNK; BY CONDIDX; RUN;

```

NOTE: There were 363849 observations read from the data set IN.H188IF1.
NOTE: SAS threaded sort was used.
NOTE: The data set WORK.CLNK has 363849 observations and 6 variables.
NOTE: Compressing data set WORK.CLNK increased size by 5.49 percent.
Compressed is 423 pages; un-compressed would require 401 pages.
NOTE: PROCEDURE SORT used (Total process time):

real time	1.24 seconds
cpu time	0.21 seconds

```

63
64     DATA ASCLNKS;
65     MERGE CLNK (IN=INCLNK KEEP=CONDIDX EVNTIDX EVENTYPE)
66           ASCONDS(IN=INASCOND KEEP=CONDIDX);
67     BY CONDIDX;
68     IF INCLNK & INASCOND;
69     RUN;

```

NOTE: There were 363849 observations read from the data set WORK.CLNK.
NOTE: There were 2288 observations read from the data set WORK.ASCONDS.
NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.
NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.
Compressed is 6 pages; un-compressed would require 4 pages.
NOTE: DATA statement used (Total process time):

real time	0.08 seconds
cpu time	0.07 seconds

```

70
71     proc report data=asclnks(obs=75) nowd headskip;
72         define condidx /'CONDIDX' order;
73         define evntidx /'EVNTIDX';
74         define eventype /'EVENTYPE';
75         break after condidx / skip;
76         format eventype eventype.;
77         title3 "sample print of work.asclnks - sorted by condidx";
78         title4 "events linked to asthma condition records";
79     run;

```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 75 observations read from the data set WORK.ASCLNKS.
NOTE: The PROCEDURE REPORT printed pages 2-4.
NOTE: PROCEDURE REPORT used (Total process time):


```
real time      0.06 seconds
cpu time       0.01 seconds
```

```
80
81      PROC SORT DATA=ASCLNKS; BY EVNTIDX; RUN;
```

```
NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
NOTE: SAS sort was used.
NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.
NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.
      Compressed is 6 pages; un-compressed would require 4 pages.
NOTE: PROCEDURE SORT used (Total process time):
      real time      0.00 seconds
      cpu time       0.01 seconds
```

```
82
83      proc print data=asclnks (obs=50);
84          format eventype eventype.;
85          title3 "sample print of work.asclnks - sorted by evntidx";
86      run;
```

```
NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
NOTE: The PROCEDURE PRINT printed page 5.
NOTE: PROCEDURE PRINT used (Total process time):
      real time      0.00 seconds
      cpu time       0.00 seconds
```

```
87
88      DATA ASCLNKS;
89          SET ASCLNKS (KEEP=EVNTIDX EVENTYPE);
90          BY EVNTIDX;
91          IF FIRST.EVNTIDX;
92      RUN;
```

```
NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
NOTE: The data set WORK.ASCLNKS has 6724 observations and 2 variables.
NOTE: Compressing data set WORK.ASCLNKS increased size by 33.33 percent.
      Compressed is 4 pages; un-compressed would require 3 pages.
NOTE: DATA statement used (Total process time):
      real time      0.00 seconds
      cpu time       0.00 seconds
```

```
93
94      proc print data=asclnks (obs=50);
95          title3 "sample print of unique evntidxs from work.asclnks";
96          format eventype eventype.;
97      run;
```

```
NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
NOTE: The PROCEDURE PRINT printed page 6.
NOTE: PROCEDURE PRINT used (Total process time):
      real time      0.00 seconds
      cpu time       0.00 seconds
```

```

98
99      *-----
100     * Get non-telephone office based visits (i.e. MVIS events) for persons with positive weights.
101     *-----;
102     DATA MVIS;
103         SET IN.H&evntnum.G (KEEP=EVNTIDX PERWT&yr.F SEETLKPV);
104         IF PERWT&yr.F > 0 & SEETLKPV NE 2;
105     RUN;

NOTE: There were 165003 observations read from the data set IN.H188G.
NOTE: The data set WORK.MVIS has 160981 observations and 3 variables.
NOTE: Compressing data set WORK.MVIS increased size by 13.92 percent.
NOTE: Compressed is 90 pages; un-compressed would require 79 pages.
NOTE: DATA statement used (Total process time):
      real time      1.57 seconds
      cpu time       0.07 seconds

106
107     PROC SORT DATA=MVIS; BY EVNTIDX; RUN;

NOTE: There were 160981 observations read from the data set WORK.MVIS.
NOTE: SAS threaded sort was used.
NOTE: The data set WORK.MVIS has 160981 observations and 3 variables.
NOTE: Compressing data set WORK.MVIS increased size by 13.92 percent.
NOTE: Compressed is 90 pages; un-compressed would require 79 pages.
NOTE: PROCEDURE SORT used (Total process time):
      real time      0.06 seconds
      cpu time       0.09 seconds

108
109     *-----
110     * Identify MVIS events which were for asthma.
111     *-----;
112     DATA ASMVIS;
113         MERGE ASCLNKS (IN=INASCLNK)
114             MVIS      (IN=INMVIS KEEP=EVNTIDX);
115         BY EVNTIDX;
116         IF INASCLNK & INMVIS;
117     RUN;

NOTE: There were 6724 observations read from the data set WORK.ASCLNKS.
NOTE: There were 160981 observations read from the data set WORK.MVIS.
NOTE: The data set WORK.ASMVIS has 1901 observations and 2 variables.
NOTE: Compressing data set WORK.ASMVIS increased size by 100.00 percent.
NOTE: Compressed is 2 pages; un-compressed would require 1 pages.
NOTE: DATA statement used (Total process time):
      real time      0.05 seconds
      cpu time       0.04 seconds

118
119     proc print data=asmvis (obs=50);
120         format eventype eventype.;

```

```

121         title3 "sample print of work.asmvis";
122         title4 "unique evntidxs from work.asclnks that are non-telephone MVIS (HC-&evntnum.G) events";
123     run;

```

NOTE: There were 50 observations read from the data set WORK.ASMVIS.
NOTE: The PROCEDURE PRINT printed page 7.
NOTE: PROCEDURE PRINT used (Total process time):

real time	0.00 seconds
cpu time	0.00 seconds

```

124
125     *-----
126     * Get PMED IDs linked to the MVIS events which were for asthma.
127     *-----;
128     PROC SORT DATA=IN.H&evntnum.IF2 OUT=RXLK; BY EVNTIDX; RUN;

```

NOTE: There were 59503 observations read from the data set IN.H188IF2.
NOTE: SAS sort was used.
NOTE: The data set WORK.RXLK has 59503 observations and 6 variables.
NOTE: Compressing data set WORK.RXLK increased size by 6.06 percent.
Compressed is 70 pages; un-compressed would require 66 pages.
NOTE: PROCEDURE SORT used (Total process time):

real time	0.13 seconds
cpu time	0.01 seconds

```

129
130     proc report data=rxlk (obs=140 keep=evntidx linkidx eventype) nowd headskip;
131         define evntidx /'EVNTIDX' order;
132         define linkidx /'LINKIDX';
133         define eventype /'EVENTYPE';
134         break after evntidx / skip;
135         format eventype eventype.;
136         title3 "sample print of work.rxlk - sorted by evntidx";
137         title4 "Rx+event link file records (HC-&evntnum.IF2)";
138     run;

```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 140 observations read from the data set WORK.RXLK.
NOTE: The PROCEDURE REPORT printed pages 8-12.
NOTE: PROCEDURE REPORT used (Total process time):

real time	0.03 seconds
cpu time	0.03 seconds

```

139
140     DATA PMEDIDS;
141     MERGE RXLK (IN=INRXLK KEEP=EVNTIDX LINKIDX EVENTYPE)
142           ASMVIS(IN=INASMVIS KEEP=EVNTIDX);
143     BY EVNTIDX;
144     IF INRXLK & INASMVIS;
145     RUN;

```

NOTE: There were 59503 observations read from the data set WORK.RXLK.
NOTE: There were 1901 observations read from the data set WORK.ASMVIS.
NOTE: The data set WORK.PMEDIDS has 1910 observations and 3 variables.

NOTE: Compressing data set WORK.PMEDIDS increased size by 200.00 percent.
Compressed is 3 pages; un-compressed would require 1 pages.

NOTE: DATA statement used (Total process time):
real time 0.01 seconds
cpu time 0.01 seconds

```
146
147     proc report data=pmedids (obs=50) nowd headskip;
148         define evntidx /'EVNTIDX' order;
149         define linkidx /'LINKIDX';
150         define eventype /'EVENTYPE';
151         break after evntidx / skip;
152         format eventype eventype.;
153         title3 "sample print of work.pmedids - sorted by evntidx";
154         title4 "work.rxlk records for evntidxs in work.asmvis";
155     run;
```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 50 observations read from the data set WORK.PMEDIDS.
NOTE: The PROCEDURE REPORT printed pages 13-14.
NOTE: PROCEDURE REPORT used (Total process time):
real time 0.01 seconds
cpu time 0.01 seconds

```
156
157     PROC SORT DATA=PMEDIDS; BY LINKIDX; RUN;
```

NOTE: There were 1910 observations read from the data set WORK.PMEDIDS.
NOTE: SAS sort was used.
NOTE: The data set WORK.PMEDIDS has 1910 observations and 3 variables.
NOTE: Compressing data set WORK.PMEDIDS increased size by 200.00 percent.
Compressed is 3 pages; un-compressed would require 1 pages.
NOTE: PROCEDURE SORT used (Total process time):
real time 0.00 seconds
cpu time 0.00 seconds

```
158
159     proc print data=pmedids (obs=50);
160         format eventype eventype.;
161         title3 "sample print of work.pmedids - sorted by linkidx";
162     run;
```

NOTE: There were 50 observations read from the data set WORK.PMEDIDS.
NOTE: The PROCEDURE PRINT printed page 15.
NOTE: PROCEDURE PRINT used (Total process time):
real time 0.00 seconds
cpu time 0.00 seconds

```
163
164     DATA PMEDIDS;
165         SET PMEDIDS (KEEP=LINKIDX);
166         BY LINKIDX;
167         IF FIRST.LINKIDX;
```

168 RUN;

NOTE: Compression was disabled for data set WORK.PMEDIDS because compression overhead would increase the size of the data set.
 NOTE: There were 1910 observations read from the data set WORK.PMEDIDS.
 NOTE: The data set WORK.PMEDIDS has 1837 observations and 1 variables.
 NOTE: DATA statement used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

169
 170 proc print data=pmedids (obs=50);
 171 title3 "sample print of unique linkidxs in work.pmedids";
 172 run;

NOTE: There were 50 observations read from the data set WORK.PMEDIDS.
 NOTE: The PROCEDURE PRINT printed page 16.
 NOTE: PROCEDURE PRINT used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

173
 174 *-----
 175 * Get PMED records linked to MVIS events which were for asthma.
 176 *-----;
 177 PROC SORT DATA=IN.H&evntnum.A OUT=PMED; BY LINKIDX; RUN;

NOTE: There were 319685 observations read from the data set IN.H188A.
 NOTE: SAS threaded sort was used.
 NOTE: The data set WORK.PMED has 319685 observations and 13 variables.
 NOTE: Compressing data set WORK.PMED decreased size by 20.19 percent.
 Compressed is 688 pages; un-compressed would require 862 pages.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 1.61 seconds
 cpu time 0.40 seconds

178
 179 DATA MVPMEDS;
 180 MERGE PMED (KEEP=LINKIDX RXRECIDX RXXP&yr.X PERWT&yr.F RXNAME)
 181 PMEDIDS (IN=A);
 182 BY LINKIDX;
 183 IF A;
 184 RUN;

NOTE: There were 319685 observations read from the data set WORK.PMED.
 NOTE: There were 1837 observations read from the data set WORK.PMEDIDS.
 NOTE: The data set WORK.MVPMEDS has 4853 observations and 5 variables.
 NOTE: Compressing data set WORK.MVPMEDS decreased size by 12.50 percent.
 Compressed is 7 pages; un-compressed would require 8 pages.
 NOTE: DATA statement used (Total process time):
 real time 0.09 seconds
 cpu time 0.10 seconds

185

```

186     proc report data=mvpmeds (obs=200) nowd;
187         column LINKIDX RXRECIDX RXNAME RXXP&yr.X PERWT&yr.F;
188         define linkidx    /'LINKIDX' order;
189         define rxrecidx   /'RXRECIDX';
190         define rxname     /'RXNAME';
191         define rxxp&yr.x  /'RXXP16X' display format=8.2; /*Update year*/
192         define PERWT&yr.F /'PERWT16F' /*display format=8.2*/; /*Update year*/
193         break after linkidx / skip;
194         title3 "sample print of work.mvpmeds";
195         title4 "PMED (HC-&evntnum.A) records for unique linkidxs in work.pmedids";
196     run;

```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 200 observations read from the data set WORK.MVPMEDS.
NOTE: The PROCEDURE REPORT printed pages 17-22.
NOTE: PROCEDURE REPORT used (Total process time):

real time	0.02 seconds
cpu time	0.01 seconds

```

197     PROC MEANS DATA=MVPMEDS N SUM;
198         VAR RXXP&yr.X;
200         TITLE3 "Total Rx expenditures associated with medical visits (excluding telephone) for asthma";
201     RUN;

```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 4853 observations read from the data set WORK.MVPMEDS.
NOTE: The PROCEDURE MEANS printed page 23.
NOTE: PROCEDURE MEANS used (Total process time):

real time	0.01 seconds
cpu time	0.01 seconds

```

202     PROC MEANS DATA=MVPMEDS N SUM;
203         VAR RXXP&yr.X;
204         WEIGHT PERWT&yr.F;
206         TITLE3 "Total Rx expenditures associated with medical visits (excluding telephone) for asthma";
207         TITLE5 "Weighted";
208     RUN;

```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 4853 observations read from the data set WORK.MVPMEDS.
NOTE: The PROCEDURE MEANS printed page 24.
NOTE: PROCEDURE MEANS used (Total process time):

real time	0.01 seconds
cpu time	0.01 seconds

```

209     ods rtf close;
210
211

```

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

real time	7.23 seconds
cpu time	1.56 seconds

HC-188I
 Sample SAS Job for Example A
 sample print of work.asconds - sorted by condidx
 COND (H190) records where ICD10CDX = 'J45'

Obs	CONDIDX	ICD10CDX
1	100061010021	J45
2	100081020011	J45
3	100081060011	J45
4	100191020051	J45
5	100341010121	J45
6	100791010061	J45
7	100851010021	J45
8	100851030011	J45
9	100911030031	J45
10	100921020051	J45
11	100921050012	J45
12	101071010011	J45
13	101141010031	J45
14	101161010011	J45
15	101351010041	J45
16	101491010011	J45
17	101701030011	J45
18	102171020081	J45
19	102211050011	J45
20	102221030011	J45
21	102231030011	J45
22	102251010011	J45
23	102261040011	J45
24	102331010021	J45
25	102421010071	J45
26	102431010061	J45
27	102551010031	J45
28	102551020011	J45
29	102841010011	J45
30	102961010051	J45
31	102962020012	J45
32	103101010011	J45
33	103161010241	J45
34	103181020011	J45
35	103361010041	J45
36	103631010071	J45
37	104021010021	J45
38	104131010011	J45
39	104161010041	J45
40	104161050011	J45
41	104511020181	J45
42	104611030012	J45
43	104751020011	J45
44	104751030011	J45
45	105011010161	J45
46	105051010051	J45
47	105051020021	J45
48	105252010022	J45
49	105531020051	J45
50	105571010071	J45

HC-188I
Sample SAS Job for Example A
sample print of work.asclnks - sorted by condidx
events linked to asthma condition records

CONDIDX	EVNTIDX	EVENTYPE
100191020051	100191020041	8 PMED
100191020051	100191020191	8 PMED
100191020051	100191020341	1 MVIS
100341010121	100341010321	8 PMED
100791010061	100791010061	2 OPAT
100791010061	100791010071	2 OPAT
100791010061	100791010081	2 OPAT
100791010061	100791010091	1 MVIS
100791010061	100791010301	1 MVIS
100791010061	100791010421	8 PMED
100791010061	100791010521	2 OPAT
100791010061	100791010911	1 MVIS
100791010061	100791010921	1 MVIS
100791010061	100791011671	8 PMED
100921020051	100921020171	8 PMED
100921050012	100921050042	8 PMED
100921050012	100921050062	8 PMED
101071010011	101071010031	8 PMED
101141010031	101141010071	1 MVIS
101141010031	101141010081	1 MVIS
101141010031	101141010261	8 PMED
101351010041	101351010321	8 PMED
101351010041	101351010331	8 PMED
101351010041	101351010411	1 MVIS
101351010041	101351010511	8 PMED
101351010041	101351010521	8 PMED
101351010041	101351010541	8 PMED
101491010011	101491010011	8 PMED
101491010011	101491010021	8 PMED
101491010011	101491010041	8 PMED
101491010011	101491010151	8 PMED
101491010011	101491010161	8 PMED
101701030011	101701030011	3 EROM
102171020081	102171020191	8 PMED
102211050011	102211050011	3 EROM
102211050011	102211050021	8 PMED
102211050011	102211050031	3 EROM
102221030011	102221030221	8 PMED
102231030011	102231030051	8 PMED
102261040011	102261040021	8 PMED
102331010021	102331010071	8 PMED
102331010021	102331010081	8 PMED
102331010021	102331010111	8 PMED
102431010061	102431010021	1 MVIS
102431010061	102431010091	1 MVIS
102431010061	102431010141	8 PMED
102551010031	102551010091	8 PMED
102551010031	102551010161	8 PMED
102551020011	102551020011	8 PMED
102551020011	102551020021	8 PMED
102551020011	102551020031	1 MVIS
102551020011	102551020041	8 PMED
102551020011	102551020051	8 PMED
102961010051	102961010011	8 PMED
102962020012	102962020012	1 MVIS
102962020012	102962020022	1 MVIS
102962020012	102962020042	8 PMED
102962020012	102962020052	8 PMED
102962020012	102962020062	2 OPAT
102962020012	102962020072	8 PMED
102962020012	102962020082	8 PMED
103161010241	103161011811	8 PMED
103161010241	103161011821	8 PMED
103631010071	103631010071	8 PMED
103631010071	103631010241	8 PMED
104021010021	104021010521	8 PMED
104131010011	104131010161	8 PMED
104131010011	104131010791	8 PMED
104161010041	104161010051	8 PMED

CONDIDX	EVNTIDX	EVENTYPE
104161050011	104161050031	8 PMED
104611030012	104611030012	1 MVIS
104611030012	104611030052	8 PMED
104611030012	104611030062	8 PMED
104751020011	104751020041	8 PMED
104751030011	104751030061	8 PMED

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Sample SAS Job for Example A
sample print of work.asclnks - sorted by evntidx

Obs	CONDIDX	EVNTIDX	EVENTYPE
1	100191020051	100191020041	8 PMED
2	100191020051	100191020191	8 PMED
3	100191020051	100191020341	1 MVIS
4	100341010121	100341010321	8 PMED
5	100791010061	100791010061	2 OPAT
6	100791010061	100791010071	2 OPAT
7	100791010061	100791010081	2 OPAT
8	100791010061	100791010091	1 MVIS
9	100791010061	100791010301	1 MVIS
10	100791010061	100791010421	8 PMED
11	100791010061	100791010521	2 OPAT
12	100791010061	100791010911	1 MVIS
13	100791010061	100791010921	1 MVIS
14	100791010061	100791011671	8 PMED
15	100921020051	100921020171	8 PMED
16	100921050012	100921050042	8 PMED
17	100921050012	100921050062	8 PMED
18	101071010011	101071010031	8 PMED
19	101141010031	101141010071	1 MVIS
20	101141010031	101141010081	1 MVIS
21	101141010031	101141010261	8 PMED
22	101351010041	101351010321	8 PMED
23	101351010041	101351010331	8 PMED
24	101351010041	101351010411	1 MVIS
25	101351010041	101351010511	8 PMED
26	101351010041	101351010521	8 PMED
27	101351010041	101351010541	8 PMED
28	101491010011	101491010011	8 PMED
29	101491010011	101491010021	8 PMED
30	101491010011	101491010041	8 PMED
31	101491010011	101491010151	8 PMED
32	101491010011	101491010161	8 PMED
33	101701030011	101701030011	3 EROM
34	102171020081	102171020191	8 PMED
35	102211050011	102211050011	3 EROM
36	102211050011	102211050021	8 PMED
37	102211050011	102211050031	3 EROM
38	102221030011	102221030221	8 PMED
39	102231030011	102231030051	8 PMED
40	102261040011	102261040021	8 PMED
41	102331010021	102331010071	8 PMED
42	102331010021	102331010081	8 PMED
43	102331010021	102331010111	8 PMED
44	102431010061	102431010021	1 MVIS
45	102431010061	102431010091	1 MVIS
46	102431010061	102431010141	8 PMED
47	102551010031	102551010091	8 PMED
48	102551010031	102551010161	8 PMED
49	102551020011	102551020011	8 PMED
50	102551020011	102551020021	8 PMED

HC-188I
Sample SAS Job for Example A
sample print of unique evtidxs from work.asclnks

Obs	EVNTIDX	EVENTYPE
1	100191020041	8 PMED
2	100191020191	8 PMED
3	100191020341	1 MVIS
4	100341010321	8 PMED
5	100791010061	2 OPAT
6	100791010071	2 OPAT
7	100791010081	2 OPAT
8	100791010091	1 MVIS
9	100791010301	1 MVIS
10	100791010421	8 PMED
11	100791010521	2 OPAT
12	100791010911	1 MVIS
13	100791010921	1 MVIS
14	100791011671	8 PMED
15	100921020171	8 PMED
16	100921050042	8 PMED
17	100921050062	8 PMED
18	101071010031	8 PMED
19	101141010071	1 MVIS
20	101141010081	1 MVIS
21	101141010261	8 PMED
22	101351010321	8 PMED
23	101351010331	8 PMED
24	101351010411	1 MVIS
25	101351010511	8 PMED
26	101351010521	8 PMED
27	101351010541	8 PMED
28	101491010011	8 PMED
29	101491010021	8 PMED
30	101491010041	8 PMED
31	101491010151	8 PMED
32	101491010161	8 PMED
33	101701030011	3 EROM
34	102171020191	8 PMED
35	102211050011	3 EROM
36	102211050021	8 PMED
37	102211050031	3 EROM
38	102221030221	8 PMED
39	102231030051	8 PMED
40	102261040021	8 PMED
41	102331010071	8 PMED
42	102331010081	8 PMED
43	102331010111	8 PMED
44	102431010021	1 MVIS
45	102431010091	1 MVIS
46	102431010141	8 PMED
47	102551010091	8 PMED
48	102551010161	8 PMED
49	102551020011	8 PMED
50	102551020021	8 PMED

HC-188I
Sample SAS Job for Example A
sample print of work.asmvis
unique evntidxs from work.asclnks that are non-telephone MVIS (HC-188G) events

Obs	EVNTIDX	EVENTYPE
1	100191020341	1 MVIS
2	100791010091	1 MVIS
3	100791010301	1 MVIS
4	100791010911	1 MVIS
5	100791010921	1 MVIS
6	101141010071	1 MVIS
7	101141010081	1 MVIS
8	101351010411	1 MVIS
9	102431010021	1 MVIS
10	102431010091	1 MVIS
11	102551020031	1 MVIS
12	102962020012	1 MVIS
13	102962020022	1 MVIS
14	104611030012	1 MVIS
15	105691020011	1 MVIS
16	106041040021	1 MVIS
17	106311040051	1 MVIS
18	106311040081	1 MVIS
19	106311040101	1 MVIS
20	106511020071	1 MVIS
21	106971040131	1 MVIS
22	106971040141	1 MVIS
23	106971040151	1 MVIS
24	106971040171	1 MVIS
25	107011010571	1 MVIS
26	107011010581	1 MVIS
27	107011010591	1 MVIS
28	107011010601	1 MVIS
29	107011010611	1 MVIS
30	107011010621	1 MVIS
31	107011010631	1 MVIS
32	107011010641	1 MVIS
33	107011010651	1 MVIS
34	107011030051	1 MVIS
35	107501030021	1 MVIS
36	107591010021	1 MVIS
37	107591010101	1 MVIS
38	107591010111	1 MVIS
39	107591010121	1 MVIS
40	107591010131	1 MVIS
41	107591010141	1 MVIS
42	107591010251	1 MVIS
43	107591010261	1 MVIS
44	107591010271	1 MVIS
45	107591010281	1 MVIS
46	107591010291	1 MVIS
47	107831030582	1 MVIS
48	107932020012	1 MVIS
49	108501040011	1 MVIS
50	108801010101	1 MVIS

HC-188I
 Sample SAS Job for Example A
 sample print of work.rx1k - sorted by evtidx
 Rx+event link file records (HC-188IF2)

EVNTIDX	LINKIDX	EVENTYPE
100011010161	100011010181	2 OPAT
100011040051	100011040061	1 MVIS
100011040141	100011040151	3 EROM
100021010111	100021010211	1 MVIS
100021010121	100021010221	1 MVIS
100021010131	100021010231	1 MVIS
100021010131	100021010241	1 MVIS
100021010131	100021010251	1 MVIS
100021010131	100021010261	1 MVIS
100021010131	100021010271	1 MVIS
100021010131	100021010281	1 MVIS
100021010141	100021010231	1 MVIS
100021010141	100021010241	1 MVIS
100021010141	100021010251	1 MVIS
100021010141	100021010261	1 MVIS
100021010141	100021010271	1 MVIS
100021010141	100021010281	1 MVIS
100051010011	100051010021	1 MVIS
100051010051	100051010091	5 DVIS
100051010051	100051010101	5 DVIS
100051010081	100051010091	1 MVIS
100051020061	100051020081	1 MVIS
100051020061	100051020091	1 MVIS
100051020111	100051020211	1 MVIS
100051020111	100051020221	1 MVIS
100061010011	100061010021	1 MVIS
100061010011	100061010031	1 MVIS
100061020011	100061020021	1 MVIS
100061020011	100061020031	1 MVIS
100061020081	100061020121	1 MVIS
100061020091	100061020121	1 MVIS
100061020091	100061020131	1 MVIS
100061020101	100061020121	1 MVIS
100061020111	100061020121	1 MVIS
100061020111	100061020131	1 MVIS
100081020011	100081020051	1 MVIS
100081020011	100081020061	1 MVIS
100081020021	100081020071	1 MVIS
100081020101	100081020181	1 MVIS
100081020101	100081020191	1 MVIS
100081030051	100081030061	1 MVIS
100081030051	100081030071	1 MVIS
100081040031	100081040061	1 MVIS
100081040031	100081040071	1 MVIS
100081040101	100081040191	1 MVIS
100081040101	100081040201	1 MVIS
100081050031	100081050061	1 MVIS
100081050031	100081050071	1 MVIS
100081050031	100081050081	1 MVIS
100081050121	100081050211	1 MVIS
100081050121	100081050221	1 MVIS
100081050121	100081050231	1 MVIS
100081050121	100081050241	1 MVIS
100081060021	100081060111	1 MVIS
100081060021	100081060121	1 MVIS
100081070041	100081070081	2 OPAT
100081070041	100081070091	2 OPAT
100091020031	100091020041	1 MVIS
100091020061	100091020181	1 MVIS
100091030101	100091030121	1 MVIS
100101010021	100101010041	1 MVIS
100141010031	100141010041	1 MVIS
100141010081	100141010171	5 DVIS
100141010131	100141010181	1 MVIS
100141010261	100141010271	1 MVIS
100171010011	100171010031	3 EROM
100191020011	100191020021	5 DVIS
100191020081	100191020171	1 MVIS
100221010011	100221010021	1 MVIS

EVNTIDX	LINKIDX	EVENTYPE
100221030011	100221030031	1 MVIS
100231010051	100231010081	1 MVIS
100231010131	100231010161	1 MVIS
100231010131	100231010171	1 MVIS
100231010131	100231010181	1 MVIS
100231010131	100231010191	1 MVIS
100231010131	100231010201	1 MVIS
100231020011	100231020041	1 MVIS
100231020011	100231020051	1 MVIS
100251010011	100251010021	2 OPAT
100251010011	100251010031	2 OPAT
100251010091	100251010111	2 OPAT
100251010091	100251010121	2 OPAT
100251010091	100251010131	2 OPAT
100251020011	100251020021	1 MVIS
100251020011	100251020031	1 MVIS
100251020011	100251020041	1 MVIS
100251020051	100251020071	5 DVIS
100251020101	100251020121	1 MVIS
100251020101	100251020131	1 MVIS
100251020111	100251020141	1 MVIS
100251020111	100251020151	1 MVIS
100251020111	100251020161	1 MVIS
100251030011	100251030021	1 MVIS
100251030011	100251030031	1 MVIS
100251030011	100251030041	1 MVIS
100251030061	100251030071	1 MVIS
100251030061	100251030081	1 MVIS
100251030061	100251030091	1 MVIS
100251030111	100251030131	1 MVIS
100251030111	100251030141	1 MVIS
100251030111	100251030151	1 MVIS
100281010011	100281010031	5 DVIS
100291010041	100291010111	3 EROM
100291010171	100291010401	1 MVIS
100291010181	100291010401	1 MVIS
100291010221	100291010411	1 MVIS
100291010221	100291010421	1 MVIS
100291010221	100291010431	1 MVIS
100291010221	100291010441	1 MVIS
100291010231	100291010411	1 MVIS
100291010231	100291010421	1 MVIS
100291010231	100291010431	1 MVIS
100291010231	100291010441	1 MVIS
100291010241	100291010451	1 MVIS
100291010251	100291010461	3 EROM
100291010261	100291010471	3 EROM
100291010571	100291010711	1 MVIS
100291010571	100291010721	1 MVIS
100291010571	100291010731	1 MVIS
100291010571	100291010741	1 MVIS
100291020031	100291020071	3 EROM
100291020031	100291020081	3 EROM
100311020011	100311020071	1 MVIS
100311020011	100311020081	1 MVIS
100311020011	100311020091	1 MVIS
100311020011	100311020101	1 MVIS
100311020111	100311020181	1 MVIS
100311020111	100311020191	1 MVIS
100311020111	100311020201	1 MVIS
100311020141	100311020211	1 MVIS
100311020151	100311020221	2 OPAT
100311020601	100311020711	2 OPAT
100311020601	100311020721	2 OPAT
100341010041	100341010051	1 MVIS
100341010041	100341010061	1 MVIS
100341010041	100341010071	1 MVIS
100341010041	100341010081	1 MVIS
100341010091	100341010171	1 MVIS
100341010091	100341010181	1 MVIS
100341010091	100341010191	1 MVIS

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Sample SAS Job for Example A

sample print of work.pmedids - sorted by evtndix
work.rxlk records for evtndixs in work.asmvis

EVNTIDX	LINKIDX	EVENTYPE
100791010301	100791010391	1 MVIS
100791010301	100791010421	1 MVIS
100791010911	100791011671	1 MVIS
101141010071	101141010151	1 MVIS
101141010071	101141010161	1 MVIS
102431010021	102431010051	1 MVIS
102431010091	102431010141	1 MVIS
102962020012	102962020042	1 MVIS
102962020012	102962020052	1 MVIS
102962020022	102962020052	1 MVIS
104611030012	104611030052	1 MVIS
104611030012	104611030062	1 MVIS
105691020011	105691020021	1 MVIS
106041040021	106041040031	1 MVIS
106041040021	106041040041	1 MVIS
106311040081	106311040091	1 MVIS
106311040101	106311040121	1 MVIS
107011010571	107011010721	1 MVIS
107011010571	107011010731	1 MVIS
107011010571	107011010741	1 MVIS
107011010571	107011010751	1 MVIS
107011010571	107011010761	1 MVIS
107011010571	107011010771	1 MVIS
107011010571	107011010821	1 MVIS
107011030051	107011030081	1 MVIS
107501030021	107501030031	1 MVIS
107591010021	107591010051	1 MVIS
107591010021	107591010061	1 MVIS
107591010021	107591010071	1 MVIS
107591010021	107591010081	1 MVIS
107831030582	107831030572	1 MVIS
107932020012	107932020092	1 MVIS
107932020012	107932020102	1 MVIS
107932020012	107932020112	1 MVIS
107932020012	107932020122	1 MVIS
108501040011	108501040031	1 MVIS
108801010101	108801010261	1 MVIS
108801010101	108801010271	1 MVIS
108801010101	108801010281	1 MVIS
108801010101	108801010291	1 MVIS
108801010101	108801010301	1 MVIS
108801010101	108801010311	1 MVIS
108801010101	108801010321	1 MVIS
108801010101	108801010331	1 MVIS
109391030012	109391030032	1 MVIS
109521010011	109521010021	1 MVIS
109521010011	109521010031	1 MVIS
109521010011	109521010041	1 MVIS
109521010011	109521010051	1 MVIS
109521010011	109521010061	1 MVIS

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Sample SAS Job for Example A
sample print of work.pmedids - sorted by linkidx

Obs	EVNTIDX	LINKIDX	EVENTYPE
1	100791010301	100791010391	1 MVIS
2	100791010301	100791010421	1 MVIS
3	100791010911	100791011671	1 MVIS
4	101141010071	101141010151	1 MVIS
5	101141010071	101141010161	1 MVIS
6	102431010021	102431010051	1 MVIS
7	102431010091	102431010141	1 MVIS
8	102962020012	102962020042	1 MVIS
9	102962020012	102962020052	1 MVIS
10	102962020022	102962020052	1 MVIS
11	104611030012	104611030052	1 MVIS
12	104611030012	104611030062	1 MVIS
13	105691020011	105691020021	1 MVIS
14	106041040021	106041040031	1 MVIS
15	106041040021	106041040041	1 MVIS
16	106311040081	106311040091	1 MVIS
17	106311040101	106311040121	1 MVIS
18	107011010571	107011010721	1 MVIS
19	107011010571	107011010731	1 MVIS
20	107011010571	107011010741	1 MVIS
21	107011010571	107011010751	1 MVIS
22	107011010571	107011010761	1 MVIS
23	107011010571	107011010771	1 MVIS
24	107011010571	107011010821	1 MVIS
25	107011030051	107011030081	1 MVIS
26	107501030021	107501030031	1 MVIS
27	107591010021	107591010051	1 MVIS
28	107591010021	107591010061	1 MVIS
29	107591010021	107591010071	1 MVIS
30	107591010021	107591010081	1 MVIS
31	107831030582	107831030572	1 MVIS
32	107932020012	107932020092	1 MVIS
33	107932020012	107932020102	1 MVIS
34	107932020012	107932020112	1 MVIS
35	107932020012	107932020122	1 MVIS
36	108501040011	108501040031	1 MVIS
37	108801010101	108801010261	1 MVIS
38	108801010101	108801010271	1 MVIS
39	108801010101	108801010281	1 MVIS
40	108801010101	108801010291	1 MVIS
41	108801010101	108801010301	1 MVIS
42	108801010101	108801010311	1 MVIS
43	108801010101	108801010321	1 MVIS
44	108801010101	108801010331	1 MVIS
45	109391030012	109391030032	1 MVIS
46	109521010011	109521010021	1 MVIS
47	109521010011	109521010031	1 MVIS
48	109521010011	109521010041	1 MVIS
49	109521010011	109521010051	1 MVIS
50	109521010011	109521010061	1 MVIS

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Sample SAS Job for Example A
sample print of unique linkidxs in work.pmedids

Obs	LINKIDX
1	100791010391
2	100791010421
3	100791011671
4	101141010151
5	101141010161
6	102431010051
7	102431010141
8	102962020042
9	102962020052
10	104611030052
11	104611030062
12	105691020021
13	106041040031
14	106041040041
15	106311040091
16	106311040121
17	107011010721
18	107011010731
19	107011010741
20	107011010751
21	107011010761
22	107011010771
23	107011010821
24	107011030081
25	107501030031
26	107591010051
27	107591010061
28	107591010071
29	107591010081
30	107831030572
31	107932020092
32	107932020102
33	107932020112
34	107932020122
35	108501040031
36	108801010261
37	108801010271
38	108801010281
39	108801010291
40	108801010301
41	108801010311
42	108801010321
43	108801010331
44	109391030032
45	109521010021
46	109521010031
47	109521010041
48	109521010051
49	109521010061
50	109521010071

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Sample SAS Job for Example A
sample print of work.mvpmeds
PMED (HC-188A) records for unique linkidxs in work.pmedids

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
100791010391	100791010391001	FLUCONAZOLE	169.70	12227.437090
100791010391	100791010391002	FLUCONAZOLE	169.70	12227.437090
100791010421	100791010421001	XOLAIR	898.46	12227.437090
100791010421	100791010421002	XOLAIR	898.46	12227.437090
100791010421	100791010421003	XOLAIR	898.46	12227.437090
100791011671	100791011671001	ADVAIR HFA	333.49	12227.437090
101141010151	101141010151001	PREDNISONE	1.96	11003.338494
101141010161	101141010161001	DOXYCYC MONO	11.39	11003.338494
102431010051	102431010051001	FLUTICASONE	28.26	5931.088062
102431010141	102431010141001	DULERA	280.09	5931.088062
102431010141	102431010141002	DULERA	280.09	5931.088062
102962020042	102962020042001	Proventil HFA	75.02	3608.903468
102962020052	102962020052001	Montelukast	15.93	3608.903468
104611030052	104611030052001	QVAR	196.42	13225.222459
104611030062	104611030062001	PROMETHAZINE	11.99	13225.222459
105691020021	105691020021001	QVAR	149.40	2160.841180
105691020021	105691020021002	QVAR	149.40	2160.841180
105691020021	105691020021003	QVAR	156.32	2160.841180
106041040031	106041040031001	VENTOLIN HFA	51.81	3990.784371
106041040041	106041040041001	FLOVENT HFA	161.27	3990.784371
106311040091	106311040091001	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121001	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121002	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121003	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121004	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121005	VENTOLIN HFA	69.99	5282.050345
107011010721	107011010721001	BENZTROPINE	3.65	2013.822043
107011010721	107011010721002	BENZTROPINE	3.65	2013.822043
107011010721	107011010721003	BENZTROPINE	3.65	2013.822043
107011010721	107011010721004	BENZTROPINE	3.65	2013.822043
107011010721	107011010721005	BENZTROPINE	3.65	2013.822043
107011010731	107011010731001	ZOLPIDEM	5.09	2013.822043
107011010731	107011010731002	ZOLPIDEM	5.65	2013.822043
107011010731	107011010731003	ZOLPIDEM	5.65	2013.822043
107011010731	107011010731004	ZOLPIDEM	5.09	2013.822043
107011010731	107011010731005	ZOLPIDEM	5.65	2013.822043
107011010741	107011010741001	BUSPIRONE	41.46	2013.822043
107011010741	107011010741002	BUSPIRONE	41.46	2013.822043
107011010741	107011010741003	BUSPIRONE	41.46	2013.822043
107011010741	107011010741004	BUSPIRONE	41.46	2013.822043
107011010741	107011010741005	BUSPIRONE	41.46	2013.822043
107011010751	107011010751001	CLONAZEPAM	3.58	2013.822043
107011010751	107011010751002	CLONAZEPAM	3.58	2013.822043
107011010751	107011010751003	CLONAZEPAM	3.58	2013.822043
107011010751	107011010751004	CLONAZEPAM	1.78	2013.822043
107011010751	107011010751005	CLONAZEPAM	12.53	2013.822043
107011010761	107011010761001	FLUOXETINE	13.65	2013.822043
107011010761	107011010761002	FLUOXETINE	14.70	2013.822043
107011010761	107011010761003	FLUOXETINE	13.65	2013.822043
107011010761	107011010761004	FLUOXETINE	13.65	2013.822043
107011010761	107011010761005	FLUOXETINE	13.65	2013.822043
107011010771	107011010771001	PERPHENAZINE	61.93	2013.822043
107011010771	107011010771002	PERPHENAZINE	61.93	2013.822043
107011010771	107011010771003	PERPHENAZINE	67.61	2013.822043
107011010771	107011010771004	PERPHENAZINE	67.69	2013.822043
107011010771	107011010771005	PERPHENAZINE	67.61	2013.822043
107011010821	107011010821001	NYSTATIN	62.97	2013.822043
107011030081	107011030081001	FERROUS SULF	1.51	1878.764459
107501030031	107501030031001	SINGULAIR	218.54	1345.088634
107501030031	107501030031002	SINGULAIR	218.54	1345.088634
107591010051	107591010051001	MINOCYCLINE	11.24	7720.680512
107591010061	107591010061001	VITAMIN D	8.29	7720.680512
107591010071	107591010071001	LYRICA	352.01	7720.680512
107591010081	107591010081001	TRAMADOL HCL	254.99	7720.680512
107831030572	107831030572001	PROAIR HFA	53.29	10437.059579
107932020092	107932020092001	OXYCODONE	2.50	9453.253501
107932020102	107932020102001	TRAZODONE	1.19	9453.253501
107932020112	107932020112001	RANITIDINE	4.39	9453.253501
107932020112	107932020112002	RANITIDINE	4.39	9453.253501

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
107932020122	107932020122001	SPIRIVA	344.56	9453.253501
108501040031	108501040031001	CEFDINIR	48.76	14494.053560
108501040031	108501040031002	CEFDINIR	48.76	14494.053560
108801010261	108801010261001	PRAMIPEXOLE	23.73	10112.518455
108801010261	108801010261002	PRAMIPEXOLE	23.73	10112.518455
108801010261	108801010261003	PRAMIPEXOLE	22.04	10112.518455
108801010261	108801010261004	PRAMIPEXOLE	36.12	10112.518455
108801010271	108801010271001	BISOPROL FUM	7.50	10112.518455
108801010271	108801010271002	BISOPROL FUM	20.10	10112.518455
108801010271	108801010271003	BISOPROL FUM	20.10	10112.518455
108801010271	108801010271004	BISOPROL FUM	20.10	10112.518455
108801010281	108801010281001	VENLAFAXINE	116.76	10112.518455
108801010281	108801010281002	VENLAFAXINE	124.71	10112.518455
108801010281	108801010281003	VENLAFAXINE	124.71	10112.518455
108801010281	108801010281004	VENLAFAXINE	116.76	10112.518455
108801010291	108801010291001	VENLAFAXINE	6.01	10112.518455
108801010291	108801010291002	VENLAFAXINE	6.01	10112.518455
108801010291	108801010291003	VENLAFAXINE	6.01	10112.518455
108801010291	108801010291004	VENLAFAXINE	6.01	10112.518455
108801010301	108801010301001	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301002	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301003	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301004	LAMOTRIGINE	147.99	10112.518455
108801010311	108801010311001	RISPERIDONE	7.00	10112.518455
108801010311	108801010311002	RISPERIDONE	7.00	10112.518455
108801010311	108801010311003	RISPERIDONE	7.00	10112.518455
108801010311	108801010311004	RISPERIDONE	7.00	10112.518455
108801010321	108801010321001	METFORMIN	6.16	10112.518455
108801010321	108801010321002	METFORMIN	6.16	10112.518455
108801010321	108801010321003	METFORMIN	6.16	10112.518455
108801010321	108801010321004	METFORMIN	6.16	10112.518455
108801010331	108801010331001	NIFEDIPINE	80.50	10112.518455
108801010331	108801010331002	NIFEDIPINE	80.50	10112.518455
108801010331	108801010331003	NIFEDIPINE	80.50	10112.518455
108801010331	108801010331004	NIFEDIPINE	80.50	10112.518455
109391030032	109391030032001	VENTOLIN HFA	53.67	5652.752772
109521010021	109521010021001	QUETIAPINE	24.50	3265.397192
109521010031	109521010031001	BISOPRL/HCTZ	17.32	3265.397192
109521010041	109521010041001	QUETIAPINE	9.88	3265.397192
109521010051	109521010051001	GABAPENTIN	26.06	3265.397192
109521010061	109521010061001	HYDROCO/APAP	51.70	3265.397192
109521010071	109521010071001	QUETIAPINE	9.88	3265.397192
109521010081	109521010081001	MELOXICAM	13.32	3265.397192
109521010091	109521010091001	AMLODIPINE	16.34	3265.397192
109521010151	109521010151001	QUETIAPINE	9.88	3265.397192
109521010151	109521010151002	QUETIAPINE	9.88	3265.397192
109521010151	109521010151003	QUETIAPINE	9.88	3265.397192
109521010151	109521010151004	QUETIAPINE	9.88	3265.397192
109521010151	109521010151005	QUETIAPINE	18.72	3265.397192
109521010161	109521010161001	BISOPRL/HCTZ	17.32	3265.397192
109521010161	109521010161002	BISOPRL/HCTZ	17.32	3265.397192
109521010161	109521010161003	BISOPRL/HCTZ	17.32	3265.397192
109521010161	109521010161004	BISOPRL/HCTZ	17.32	3265.397192
109521010161	109521010161005	BISOPRL/HCTZ	17.32	3265.397192
109521010171	109521010171001	QUETIAPINE	24.50	3265.397192
109521010171	109521010171002	QUETIAPINE	24.50	3265.397192
109521010171	109521010171003	QUETIAPINE	24.50	3265.397192
109521010171	109521010171004	QUETIAPINE	24.50	3265.397192
109521010171	109521010171005	QUETIAPINE	24.50	3265.397192
109521010181	109521010181001	GABAPENTIN	26.06	3265.397192
109521010181	109521010181002	GABAPENTIN	26.06	3265.397192
109521010181	109521010181003	GABAPENTIN	26.06	3265.397192
109521010181	109521010181004	GABAPENTIN	26.06	3265.397192
109521010181	109521010181005	GABAPENTIN	26.06	3265.397192
109521010191	109521010191001	HYDROCO/APAP	72.14	3265.397192
109521010191	109521010191002	HYDROCO/APAP	72.14	3265.397192
109521010191	109521010191003	HYDROCO/APAP	72.14	3265.397192
109521010191	109521010191004	HYDROCO/APAP	61.99	3265.397192
109521010191	109521010191005	HYDROCO/APAP	61.99	3265.397192
109521010201	109521010201001	QUETIAPINE	9.88	3265.397192
109521010201	109521010201002	QUETIAPINE	9.88	3265.397192
109521010201	109521010201003	QUETIAPINE	9.88	3265.397192
109521010201	109521010201004	QUETIAPINE	9.88	3265.397192
109521010201	109521010201005	QUETIAPINE	18.72	3265.397192

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
109521010211	109521010211001	MELOXICAM	13.32	3265.397192
109521010211	109521010211002	MELOXICAM	13.32	3265.397192
109521010211	109521010211003	MELOXICAM	13.32	3265.397192
109521010211	109521010211004	MELOXICAM	13.32	3265.397192
109521010211	109521010211005	MELOXICAM	13.32	3265.397192
109521010221	109521010221001	AMLODIPINE	16.34	3265.397192
109521010221	109521010221002	AMLODIPINE	16.34	3265.397192
109521010221	109521010221003	AMLODIPINE	16.34	3265.397192
109521010221	109521010221004	AMLODIPINE	16.34	3265.397192
109521010221	109521010221005	AMLODIPINE	16.34	3265.397192
109521010373	109521010373001	BISOPRL/HCTZ	17.32	3265.397192
109521010373	109521010373002	BISOPRL/HCTZ	17.32	3265.397192
109521010373	109521010373003	BISOPRL/HCTZ	17.32	3265.397192
109521010373	109521010373004	BISOPRL/HCTZ	17.32	3265.397192
109521010383	109521010383001	GRALISE	547.70	3265.397192
109521010383	109521010383002	GRALISE	547.70	3265.397192
109521010383	109521010383003	GRALISE	547.70	3265.397192
109521010383	109521010383004	GRALISE	547.70	3265.397192
109521010393	109521010393001	QUETIAPINE	18.73	3265.397192
109521010393	109521010393002	QUETIAPINE	9.88	3265.397192
109521010393	109521010393003	QUETIAPINE	9.88	3265.397192
109521010393	109521010393004	QUETIAPINE	9.88	3265.397192
109521010403	109521010403001	MELOXICAM	13.32	3265.397192
109521010403	109521010403002	MELOXICAM	13.32	3265.397192
109521010403	109521010403003	MELOXICAM	13.32	3265.397192
109521010403	109521010403004	MELOXICAM	13.32	3265.397192
109521010413	109521010413001	AMLODIPINE	16.34	3265.397192
109521010413	109521010413002	AMLODIPINE	16.34	3265.397192
109521010413	109521010413003	AMLODIPINE	16.34	3265.397192
109521010413	109521010413004	AMLODIPINE	16.34	3265.397192
110041020061	110041020061001	AMOXICILLIN	2.00	1869.541020
110041020071	110041020071001	VENTOLIN HFA	50.31	1869.541020
110041020071	110041020071002	VENTOLIN HFA	69.99	1869.541020
110041020081	110041020081001	FLONASE ALGY	28.34	1869.541020
110041020091	110041020091001	KETOTIF FUM	9.70	1869.541020
110181010391	110181010391001	MONTELUKAST	11.25	5239.470523
111381040041	111381040041001	Amoxicillan	8.81	6210.586601
111381040051	111381040051001	PREDNISOLONE	1.95	6210.586601
111381040061	111381040061001	ALBUTEROL	87.96	6210.586601
111441010101	111441010101001	PROVENTIL	70.41	1534.466925
111481010071	111481010071001	ADVAIR DISKU	519.99	4032.652137
111481010081	111481010081001	BENICAR	326.00	4032.652137
111481010091	111481010091001	MONTELUKAST	7.65	4032.652137
111481010101	111481010101001	PIOGLITAZONE	899.97	4032.652137
111481010111	111481010111001	GLIMEPIRIDE	8.46	4032.652137
111741020031	111741020031001	HM TRIPLE	8.00	23118.775327
111841020041	111841020041001	DULERA	361.99	2304.061577
111841020051	111841020051001	PROAIR HFA	55.08	2304.061577
111841020061	111841020061001	GLIPIZIDE	22.99	2304.061577
111841020071	111841020071001	METFORMIN	14.33	2304.061577
111841020081	111841020081001	ALPRAZOLAM	2.95	2304.061577
111841020091	111841020091001	MONTELUKAST	15.45	2304.061577
111841020101	111841020101001	ATORVASTATIN	22.25	2304.061577
111841020111	111841020111001	VENTOLIN HFA	50.35	2304.061577
111841020121	111841020121001	DULERA	361.99	2304.061577
111841020131	111841020131001	IBUPROFEN	2.33	2304.061577
111841020141	111841020141001	OMEPRAZOLE	13.23	2304.061577

HC-188I

Sample SAS Job for Example A

Total Rx expenditures associated with medical visits (excluding telephone) for asthma

Analysis Variable : RXXP16X SUM OF PAYMENTS RXSF16X-RXOU16X(IMPUTED)

N	Sum
4853	521946.60

HC-188I
Sample SAS Job for Example A
Total Rx expenditures associated with medical visits (excluding telephone) for asthma

Weighted

Analysis Variable : RXXP16X SUM OF PAYMENTS RXSF16X-RXOU16X(IMPUTED)

N	Sum
4853	4636700045

1

NOTE: Copyright (c) 2016 by SAS Institute Inc., Cary, NC, USA.

NOTE: SAS (r) Proprietary Software 9.4 (TS1M6)

NOTE: This session is executing on the X64_10PRO platform.

NOTE: SAS initialization used:

real time 0.55 seconds
cpu time 0.24 seconds

NOTE: AUTOEXEC processing beginning; file is C:\Program Files\SAS\SASMISC\autoexec_9464.sas.

NOTE: AUTOEXEC processing completed.

1
2
3
4
5
6
7

8 ods rtf file = 'sampleB.rtf';

NOTE: Writing RTF Body file: sampleB.rtf

9

10 ods noproctitle;

11

12 OPTIONS LS=132 PS=59;

13

14 %let yr=16;

15 %let evntnum=188; /* BE SURE TO UPDTE FOR CURRENT FY */

16 %let condnum=190; /* BE SURE TO UPDTE FOR CURRENT FY */

17

18 TITLE1 "HC-&evntnum.I";

19 TITLE2 "Sample SAS Job for Example B";

20

21 LIBNAME IN "C:\Data";

NOTE: Libref IN was successfully assigned as follows:

Engine: V9

Physical Name: C:\Data

22

23

24

* Calculate the expenditures for prescribed medicines associated with asthma.

25

*****;

26

PROC FORMAT;

27

VALUE EVENTYPE

28

1 = "1 MVIS"

```

29         2 = "2 OPAT"
30         3 = "3 EROM"
31         4 = "4 STAZ"
32         5 = "5 DVIS"
33         6 = "6 OMED"
34         7 = "7 HVIS"
35         8 = "8 PMED";

```

NOTE: Format EVENTYPE has been output.

```
36         RUN;
```

NOTE: PROCEDURE FORMAT used (Total process time):

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```
37
```

```

38         *-----
39         * Get condition records coded as asthma.
40         *-----;
41         DATA ASCONDS;
42             SET IN.H&condnum (KEEP=CONDIDX ICD10CDX);
43             IF ICD10CDX="J45";
44         RUN;

```

NOTE: There were 123100 observations read from the data set IN.H190.

NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.

NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.

NOTE: DATA statement used (Total process time):

```

real time      0.97 seconds
cpu time       0.03 seconds

```

```
45
```

```

46         *-----
47         * Get the events linked to each of the asthma condition records.
48         *-----;
49         PROC SORT DATA=ASCONDS; BY CONDX; RUN;

```

NOTE: There were 2288 observations read from the data set WORK.ASCONDS.

NOTE: SAS sort was used.

NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.

NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.

NOTE: PROCEDURE SORT used (Total process time):

```

real time      0.00 seconds
cpu time       0.00 seconds

```

```
50
```

```

51         proc print data=asconds (obs=50);
52             title3 "sample print of work.asconds - sorted by condx";
53             title4 "COND (H&condnum) records where ICD10CDX=J45";
54         run;

```

NOTE: There were 50 observations read from the data set WORK.ASCONDS.

NOTE: The PROCEDURE PRINT printed page 1.

NOTE: PROCEDURE PRINT used (Total process time):

real time	0.04 seconds
cpu time	0.04 seconds

55

```
56 PROC SORT DATA=IN.H&evntnum.IF1 OUT=CLNK; BY CONDIDX; RUN;
```

NOTE: There were 363849 observations read from the data set IN.H188IF1.

NOTE: SAS threaded sort was used.

NOTE: The data set WORK.CLNK has 363849 observations and 6 variables.

NOTE: Compressing data set WORK.CLNK increased size by 5.49 percent.

Compressed is 423 pages; un-compressed would require 401 pages.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.60 seconds
cpu time	0.28 seconds

57

```
58 DATA ASCLNKS;
59 MERGE CLNK (IN=INCLNK KEEP=CONDIDX EVNTIDX EVENTYPE)
60 ASCONDS(IN=INASCOND KEEP=CONDIDX);
61 BY CONDIDX;
62 IF INCLNK & INASCOND;
63 RUN;
```

NOTE: There were 363849 observations read from the data set WORK.CLNK.

NOTE: There were 2288 observations read from the data set WORK.ASCONDS.

NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.

NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.

Compressed is 6 pages; un-compressed would require 4 pages.

NOTE: DATA statement used (Total process time):

real time	0.09 seconds
cpu time	0.09 seconds

64

```
65 proc report data=asclnks (obs=75) nowd headskip;
66 define condidx /'CONDIDX' order;
67 define EVNTIDX /'EVNTIDX';
68 define EVENTYPE /'EVENTYPE';
69 break after condidx / skip;
70 format eventype eventype.;
71 title3 "sample print of work.asclnks - sorted by condidx";
72 title4 "events linked to asthma condition records";
73 run;
```

NOTE: Multiple concurrent threads will be used to summarize data.

NOTE: There were 75 observations read from the data set WORK.ASCLNKS.

NOTE: The PROCEDURE REPORT printed pages 2-4.

NOTE: PROCEDURE REPORT used (Total process time):

real time	0.02 seconds
cpu time	0.01 seconds

74

```
75 PROC SORT DATA=ASCLNKS; BY EVNTIDX; RUN;
```

NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
 NOTE: SAS sort was used.
 NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.
 NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.
 Compressed is 6 pages; un-compressed would require 4 pages.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 0.01 seconds
 cpu time 0.01 seconds

```
76
77     proc print data=asclnks (obs=50);
78         format eventype eventype.;
79         title3 "sample print of work.asclnks - sorted by evntidx";
80     run;
```

NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
 NOTE: The PROCEDURE PRINT printed page 5.
 NOTE: PROCEDURE PRINT used (Total process time):
 real time 0.01 seconds
 cpu time 0.01 seconds

```
81
82     DATA ASCLNKS;
83         SET ASCLNKS (KEEP=EVNTIDX EVENTYPE);
84         BY EVNTIDX;
85         IF FIRST.EVNTIDX;
86     RUN;
```

NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
 NOTE: The data set WORK.ASCLNKS has 6724 observations and 2 variables.
 NOTE: Compressing data set WORK.ASCLNKS increased size by 33.33 percent.
 Compressed is 4 pages; un-compressed would require 3 pages.
 NOTE: DATA statement used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

```
87
88     proc print data=asclnks (obs=50);
89         format eventype eventype.;
90         title3 "sample print of unique evntidxs from work.asclnks";
91     run;
```

NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
 NOTE: The PROCEDURE PRINT printed page 6.
 NOTE: PROCEDURE PRINT used (Total process time):
 real time 0.01 seconds
 cpu time 0.01 seconds

```
92
93     *-----;
94     * Get PMED records linked to asthma condition records.
95     *-----;
```

```
96 PROC SORT DATA=IN.H&evntnum.A OUT=PMED; BY LINKIDX; RUN;
```

```
NOTE: There were 319685 observations read from the data set IN.H188A.
NOTE: SAS threaded sort was used.
NOTE: The data set WORK.PMED has 319685 observations and 13 variables.
NOTE: Compressing data set WORK.PMED decreased size by 20.19 percent.
      Compressed is 688 pages; un-compressed would require 862 pages.
NOTE: PROCEDURE SORT used (Total process time):
      real time          1.54 seconds
      cpu time           0.36 seconds
```

```
97
98 DATA ASPMEDS;
99 MERGE PMED (KEEP=LINKIDX RXRECIDX RXNAME RXXP&yr.X PERWT&yr.F)
100 ASCLNKS (IN=INASCLNK KEEP=EVNTIDX RENAME=(EVNTIDX=LINKIDX));
101 BY LINKIDX;
102 IF INASCLNK & PERWT&yr.F>0;
103 RUN;
```

```
NOTE: There were 319685 observations read from the data set WORK.PMED.
NOTE: There were 6724 observations read from the data set WORK.ASCLNKS.
NOTE: The data set WORK.ASPMEDS has 9604 observations and 5 variables.
NOTE: Compressing data set WORK.ASPMEDS decreased size by 26.67 percent.
      Compressed is 11 pages; un-compressed would require 15 pages.
NOTE: DATA statement used (Total process time):
      real time          0.11 seconds
      cpu time           0.10 seconds
```

```
104
105 proc report data=aspmeds (obs=300) nowd headskip;
106 column LINKIDX RXRECIDX RXNAME RXXP&yr.X PERWT&yr.F;
107 define linkidx / 'LINKIDX' order;
108 define rxrecidx / 'RXRECIDX';
109 define rxname / 'RXNAME';
110 define rxxp&yr.x / 'RXXP16X' display format=8.2; /*update year*/
111 define perwt&yr.f / 'PERWT16F' /*display format=8.2*/; /*update year*/
112 break after linkidx / skip;
113 title3 "sample print of work.aspmeds";
114 title4 "PMED (HC-&evntnum.A) records which link to condition records coded as asthma";
115 run;
```

```
NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 300 observations read from the data set WORK.ASPMEDS.
NOTE: The PROCEDURE REPORT printed pages 7-15.
NOTE: PROCEDURE REPORT used (Total process time):
      real time          0.04 seconds
      cpu time           0.04 seconds
```

```
116
117 PROC MEANS DATA=ASPMEDS N SUM;
118 VAR RXXP&yr.X;
119 TITLE3 "Total Rx expenditures associated with asthma";
120 RUN;
```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 9604 observations read from the data set WORK.ASPMEDS.
NOTE: The PROCEDURE MEANS printed page 16.
NOTE: PROCEDURE MEANS used (Total process time):

real time	0.01 seconds
cpu time	0.01 seconds

```
121
122     PROC MEANS DATA=ASPMEDS N SUM;
123     VAR RXXP&yr.X;
124     WEIGHT PERWT&yr.F;
125     TITLE3 "Total Rx expenditures associated with asthma";
126     TITLE5 "Weighted";
127     RUN;
```

NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 9604 observations read from the data set WORK.ASPMEDS.
NOTE: The PROCEDURE MEANS printed page 17.
NOTE: PROCEDURE MEANS used (Total process time):

real time	0.00 seconds
cpu time	0.00 seconds

```
128
129     ods rtf close;
130
```

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

real time	4.35 seconds
cpu time	1.42 seconds

HC-188I
 Sample SAS Job for Example B
 sample print of work.asconds - sorted by condidx
 COND (H190) records where ICD10CDX=J45

Obs	CONDIDX	ICD10CDX
1	100061010021	J45
2	100081020011	J45
3	100081060011	J45
4	100191020051	J45
5	100341010121	J45
6	100791010061	J45
7	100851010021	J45
8	100851030011	J45
9	100911030031	J45
10	100921020051	J45
11	100921050012	J45
12	101071010011	J45
13	101141010031	J45
14	101161010011	J45
15	101351010041	J45
16	101491010011	J45
17	101701030011	J45
18	102171020081	J45
19	102211050011	J45
20	102221030011	J45
21	102231030011	J45
22	102251010011	J45
23	102261040011	J45
24	102331010021	J45
25	102421010071	J45
26	102431010061	J45
27	102551010031	J45
28	102551020011	J45
29	102841010011	J45
30	102961010051	J45
31	102962020012	J45
32	103101010011	J45
33	103161010241	J45
34	103181020011	J45
35	103361010041	J45
36	103631010071	J45
37	104021010021	J45
38	104131010011	J45
39	104161010041	J45
40	104161050011	J45
41	104511020181	J45
42	104611030012	J45
43	104751020011	J45
44	104751030011	J45
45	105011010161	J45
46	105051010051	J45
47	105051020021	J45
48	105252010022	J45
49	105531020051	J45
50	105571010071	J45

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Sample SAS Job for Example B
sample print of work.asclnks - sorted by condidx
events linked to asthma condition records

CONDIDX	EVNTIDX	EVENTYPE
100191020051	100191020041	8 PMED
100191020051	100191020191	8 PMED
100191020051	100191020341	1 MVIS
100341010121	100341010321	8 PMED
100791010061	100791010061	2 OPAT
100791010061	100791010071	2 OPAT
100791010061	100791010081	2 OPAT
100791010061	100791010091	1 MVIS
100791010061	100791010301	1 MVIS
100791010061	100791010421	8 PMED
100791010061	100791010521	2 OPAT
100791010061	100791010911	1 MVIS
100791010061	100791010921	1 MVIS
100791010061	100791011671	8 PMED
100921020051	100921020171	8 PMED
100921050012	100921050042	8 PMED
100921050012	100921050062	8 PMED
101071010011	101071010031	8 PMED
101141010031	101141010071	1 MVIS
101141010031	101141010081	1 MVIS
101141010031	101141010261	8 PMED
101351010041	101351010321	8 PMED
101351010041	101351010331	8 PMED
101351010041	101351010411	1 MVIS
101351010041	101351010511	8 PMED
101351010041	101351010521	8 PMED
101351010041	101351010541	8 PMED
101491010011	101491010011	8 PMED
101491010011	101491010021	8 PMED
101491010011	101491010041	8 PMED
101491010011	101491010151	8 PMED
101491010011	101491010161	8 PMED
101701030011	101701030011	3 EROM
102171020081	102171020191	8 PMED
102211050011	102211050011	3 EROM
102211050011	102211050021	8 PMED
102211050011	102211050031	3 EROM
102221030011	102221030221	8 PMED
102231030011	102231030051	8 PMED
102261040011	102261040021	8 PMED
102331010021	102331010071	8 PMED
102331010021	102331010081	8 PMED
102331010021	102331010111	8 PMED
102431010061	102431010021	1 MVIS
102431010061	102431010091	1 MVIS
102431010061	102431010141	8 PMED
102551010031	102551010091	8 PMED
102551010031	102551010161	8 PMED
102551020011	102551020011	8 PMED
102551020011	102551020021	8 PMED
102551020011	102551020031	1 MVIS
102551020011	102551020041	8 PMED
102551020011	102551020051	8 PMED
102961010051	102961010011	8 PMED
102962020012	102962020012	1 MVIS
102962020012	102962020022	1 MVIS
102962020012	102962020042	8 PMED
102962020012	102962020052	8 PMED
102962020012	102962020062	2 OPAT
102962020012	102962020072	8 PMED
102962020012	102962020082	8 PMED
103161010241	103161011811	8 PMED
103161010241	103161011821	8 PMED
103631010071	103631010071	8 PMED
103631010071	103631010241	8 PMED
104021010021	104021010521	8 PMED
104131010011	104131010161	8 PMED
104131010011	104131010791	8 PMED
104161010041	104161010051	8 PMED

CONDIDX	EVNTIDX	EVENTYPE
104161050011	104161050031	8 PMED
104611030012	104611030012	1 MVIS
104611030012	104611030052	8 PMED
104611030012	104611030062	8 PMED
104751020011	104751020041	8 PMED
104751030011	104751030061	8 PMED

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Sample SAS Job for Example B
sample print of work.asclnks - sorted by evntidx

Obs	CONDIDX	EVNTIDX	EVENTYPE
1	100191020051	100191020041	8 PMED
2	100191020051	100191020191	8 PMED
3	100191020051	100191020341	1 MVIS
4	100341010121	100341010321	8 PMED
5	100791010061	100791010061	2 OPAT
6	100791010061	100791010071	2 OPAT
7	100791010061	100791010081	2 OPAT
8	100791010061	100791010091	1 MVIS
9	100791010061	100791010301	1 MVIS
10	100791010061	100791010421	8 PMED
11	100791010061	100791010521	2 OPAT
12	100791010061	100791010911	1 MVIS
13	100791010061	100791010921	1 MVIS
14	100791010061	100791011671	8 PMED
15	100921020051	100921020171	8 PMED
16	100921050012	100921050042	8 PMED
17	100921050012	100921050062	8 PMED
18	101071010011	101071010031	8 PMED
19	101141010031	101141010071	1 MVIS
20	101141010031	101141010081	1 MVIS
21	101141010031	101141010261	8 PMED
22	101351010041	101351010321	8 PMED
23	101351010041	101351010331	8 PMED
24	101351010041	101351010411	1 MVIS
25	101351010041	101351010511	8 PMED
26	101351010041	101351010521	8 PMED
27	101351010041	101351010541	8 PMED
28	101491010011	101491010011	8 PMED
29	101491010011	101491010021	8 PMED
30	101491010011	101491010041	8 PMED
31	101491010011	101491010151	8 PMED
32	101491010011	101491010161	8 PMED
33	101701030011	101701030011	3 EROM
34	102171020081	102171020191	8 PMED
35	102211050011	102211050011	3 EROM
36	102211050011	102211050021	8 PMED
37	102211050011	102211050031	3 EROM
38	102221030011	102221030221	8 PMED
39	102231030011	102231030051	8 PMED
40	102261040011	102261040021	8 PMED
41	102331010021	102331010071	8 PMED
42	102331010021	102331010081	8 PMED
43	102331010021	102331010111	8 PMED
44	102431010061	102431010021	1 MVIS
45	102431010061	102431010091	1 MVIS
46	102431010061	102431010141	8 PMED
47	102551010031	102551010091	8 PMED
48	102551010031	102551010161	8 PMED
49	102551020011	102551020011	8 PMED
50	102551020011	102551020021	8 PMED

HC-188I
 Sample SAS Job for Example B
 sample print of unique evtidxs from work.asclnks

Obs	EVNTIDX	EVENTYPE
1	100191020041	8 PMED
2	100191020191	8 PMED
3	100191020341	1 MVIS
4	100341010321	8 PMED
5	100791010061	2 OPAT
6	100791010071	2 OPAT
7	100791010081	2 OPAT
8	100791010091	1 MVIS
9	100791010301	1 MVIS
10	100791010421	8 PMED
11	100791010521	2 OPAT
12	100791010911	1 MVIS
13	100791010921	1 MVIS
14	100791011671	8 PMED
15	100921020171	8 PMED
16	100921050042	8 PMED
17	100921050062	8 PMED
18	101071010031	8 PMED
19	101141010071	1 MVIS
20	101141010081	1 MVIS
21	101141010261	8 PMED
22	101351010321	8 PMED
23	101351010331	8 PMED
24	101351010411	1 MVIS
25	101351010511	8 PMED
26	101351010521	8 PMED
27	101351010541	8 PMED
28	101491010011	8 PMED
29	101491010021	8 PMED
30	101491010041	8 PMED
31	101491010151	8 PMED
32	101491010161	8 PMED
33	101701030011	3 EROM
34	102171020191	8 PMED
35	102211050011	3 EROM
36	102211050021	8 PMED
37	102211050031	3 EROM
38	102221030221	8 PMED
39	102231030051	8 PMED
40	102261040021	8 PMED
41	102331010071	8 PMED
42	102331010081	8 PMED
43	102331010111	8 PMED
44	102431010021	1 MVIS
45	102431010091	1 MVIS
46	102431010141	8 PMED
47	102551010091	8 PMED
48	102551010161	8 PMED
49	102551020011	8 PMED
50	102551020021	8 PMED

HC-188I
Sample SAS Job for Example B
sample print of work.aspmeds
PMED (HC-188A) records which link to condition records coded as asthma

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
100191020041	100191020041001	THEOPHYLLINE	21.00	10510.931357
100191020191	100191020191001	THEOPHYLLINE	21.00	10510.931357
100191020191	100191020191002	THEOPHYLLINE	26.15	10510.931357
100341010321	100341010321001	SYMBICORT	346.99	1435.041883
100341010321	100341010321002	SYMBICORT	346.99	1435.041883
100341010321	100341010321003	SYMBICORT	346.99	1435.041883
100341010321	100341010321004	SYMBICORT	346.99	1435.041883
100791010421	100791010421001	XOLAIR	898.46	12227.437090
100791010421	100791010421002	XOLAIR	898.46	12227.437090
100791010421	100791010421003	XOLAIR	898.46	12227.437090
100791011671	100791011671001	ADVAIR HFA	333.49	12227.437090
100921020171	100921020171001	METOPROLOL	125.97	3116.962129
100921020171	100921020171002	METOPROLOL	125.97	3116.962129
100921020171	100921020171003	METOPROLOL	125.97	3116.962129
100921020171	100921020171004	METOPROLOL	30.00	3116.962129
100921020171	100921020171005	METOPROLOL	30.00	3116.962129
100921020171	100921020171006	METOPROLOL	30.00	3116.962129
100921020171	100921020171007	METOPROLOL	30.00	3116.962129
100921050042	100921050042001	ALBUTEROL	51.60	3748.423811
100921050042	100921050042002	ALBUTEROL	50.82	3748.423811
100921050062	100921050062001	ASTEPRO	199.99	3748.423811
100921050062	100921050062002	ASTEPRO	199.99	3748.423811
100921050062	100921050062003	ASTEPRO	199.99	3748.423811
101071010031	101071010031001	PROAIR HFA	55.05	12744.137115
101141010261	101141010261001	VENTOLIN HFA	71.99	11003.338494
101351010321	101351010321001	ADVAIR DISKU	958.72	45881.546805
101351010331	101351010331001	SPIRIVA	976.75	45881.546805
101351010511	101351010511001	ADVAIR DISKU	958.72	45881.546805
101351010521	101351010521001	SPIRIVA	976.75	45881.546805
101351010541	101351010541001	PROAIR HFA	156.18	45881.546805
101491010011	101491010011001	ADVAIR HFA	559.99	5476.320342
101491010021	101491010021001	ADVAIR HFA	559.99	5476.320342
101491010041	101491010041001	THEOPHYLLINE	47.49	5476.320342
101491010151	101491010151001	ADVAIR HFA	559.99	5476.320342
101491010151	101491010151002	ADVAIR HFA	559.99	5476.320342
101491010161	101491010161001	THEOPHYLLINE	47.49	5476.320342
101491010161	101491010161002	THEOPHYLLINE	47.49	5476.320342
102171020191	102171020191001	VENTOLIN HFA	53.14	2650.315370
102211050021	102211050021001	IBUPROFEN	4.00	1445.923972
102221030221	102221030221001	QVAR	237.23	2646.330886
102231030051	102231030051001	NASONEX	253.47	3495.842232
102261040021	102261040021001	PROAIR HFA	53.65	8711.349548
102331010071	102331010071001	PROAIR HFA	54.29	13186.164397
102331010071	102331010071002	PROAIR HFA	54.29	13186.164397
102331010071	102331010071003	PROAIR HFA	54.29	13186.164397
102331010071	102331010071004	PROAIR HFA	54.29	13186.164397
102331010071	102331010071005	PROAIR HFA	54.29	13186.164397
102331010071	102331010071006	PROAIR HFA	54.29	13186.164397
102331010071	102331010071007	PROAIR HFA	54.29	13186.164397
102331010081	102331010081001	TERBINAFINE	203.97	13186.164397
102331010081	102331010081002	TERBINAFINE	203.97	13186.164397
102331010081	102331010081003	TERBINAFINE	203.97	13186.164397
102331010081	102331010081004	TERBINAFINE	203.97	13186.164397
102331010081	102331010081005	TERBINAFINE	203.97	13186.164397
102331010081	102331010081006	TERBINAFINE	203.97	13186.164397
102331010081	102331010081007	TERBINAFINE	203.97	13186.164397
102331010081	102331010081008	TERBINAFINE	203.97	13186.164397
102331010111	102331010111001	PROAIR HFA	54.29	13186.164397
102331010111	102331010111002	PROAIR HFA	54.29	13186.164397
102331010111	102331010111003	PROAIR HFA	54.29	13186.164397
102331010111	102331010111004	PROAIR HFA	53.98	13186.164397
102431010141	102431010141001	DULERA	280.09	5931.088062
102431010141	102431010141002	DULERA	280.09	5931.088062
102551010091	102551010091001	ADVAIR DISKU	272.73	5196.739672
102551010161	102551010161001	ADVAIR DISKU	272.73	5196.739672
102551010161	102551010161002	ADVAIR DISKU	272.73	5196.739672
102551010161	102551010161003	ADVAIR DISKU	272.73	5196.739672
102551010161	102551010161004	ADVAIR DISKU	272.73	5196.739672
102551010161	102551010161005	ADVAIR DISKU	272.73	5196.739672

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
102551020011	102551020011001	PROAIR HFA	54.05	3399.474527
102551020021	102551020021001	FLUTICASONE	72.54	3399.474527
102551020041	102551020041001	PROAIR HFA	54.05	3399.474527
102551020041	102551020041002	PROAIR HFA	54.05	3399.474527
102551020051	102551020051001	FLUTICASONE	20.00	3399.474527
102551020051	102551020051002	FLUTICASONE	20.00	3399.474527
102961010011	102961010011001	VENTOLIN HFA	49.09	6871.759192
102962020042	102962020042001	Proventil HFA	75.02	3608.903468
102962020052	102962020052001	Montelukast	15.93	3608.903468
102962020072	102962020072001	Montelukast	15.93	3608.903468
102962020082	102962020082001	Montelukast	15.93	3608.903468
103161011811	103161011811001	SYMBICORT	291.26	9301.389839
103161011811	103161011811002	SYMBICORT	291.26	9301.389839
103161011811	103161011811003	SYMBICORT	291.26	9301.389839
103161011811	103161011811004	SYMBICORT	291.26	9301.389839
103161011821	103161011821001	SPIRIVA	353.05	9301.389839
103161011821	103161011821002	SPIRIVA	353.05	9301.389839
103161011821	103161011821003	SPIRIVA	353.05	9301.389839
103161011821	103161011821004	SPIRIVA	353.05	9301.389839
103631010071	103631010071001	Fluticas / Salmeterol	207.82	10761.301263
103631010071	103631010071002	Fluticas / Salmeterol	207.82	10761.301263
103631010071	103631010071003	Fluticas / Salmeterol	368.17	10761.301263
103631010071	103631010071004	Fluticas / Salmeterol	207.82	10761.301263
103631010071	103631010071005	Fluticas / Salmeterol	368.17	10761.301263
103631010241	103631010241001	Fluticas / Salmeterol	368.17	10761.301263
103631010241	103631010241002	Fluticas / Salmeterol	207.82	10761.301263
103631010241	103631010241003	Fluticas / Salmeterol	368.17	10761.301263
103631010241	103631010241004	Fluticas / Salmeterol	368.17	10761.301263
104021010521	104021010521001	VENTOLIN HFA	36.81	6055.979082
104131010161	104131010161001	VENTOLIN HFA	52.17	5847.822882
104131010161	104131010161002	VENTOLIN HFA	52.17	5847.822882
104131010791	104131010791001	VENTOLIN HFA	52.17	5847.822882
104131010791	104131010791002	VENTOLIN HFA	52.17	5847.822882
104131010791	104131010791003	VENTOLIN HFA	52.17	5847.822882
104131010791	104131010791004	VENTOLIN HFA	52.17	5847.822882
104131010791	104131010791005	VENTOLIN HFA	52.17	5847.822882
104161010051	104161010051001	ALBUTEROL	199.96	3482.474159
104161010051	104161010051002	ALBUTEROL	199.96	3482.474159
104161050031	104161050031001	VENTOLIN HFA	52.92	2358.844195
104611030052	104611030052001	QVAR	196.42	13225.222459
104611030062	104611030062001	PROMETHAZINE	11.99	13225.222459
104751020041	104751020041001	ALBUTEROL	19.60	2675.878640
104751030061	104751030061001	ALBUTEROL	8.37	3258.664973
105011010891	105011010891001	CETIRIZINE	9.57	3807.700390
105011010901	105011010901001	ADVAIR DISKU	346.99	3807.700390
105051010271	105051010271001	PROAIR RESPI	73.99	11236.241549
105051010271	105051010271002	PROAIR RESPI	73.99	11236.241549
105051010301	105051010301001	FUROSEMIDE	23.99	11236.241549
105571010291	105571010291001	MONTELUKAST	395.97	12670.325617
105581030011	105581030011001	ALBUTEROL	24.99	3225.264137
105581030021	105581030021001	ADVAIR DISKU	441.39	3225.264137
105641010141	105641010141001	INVOKANA	399.27	3566.754301
105641010141	105641010141002	INVOKANA	399.27	3566.754301
105691020021	105691020021001	QVAR	149.40	2160.841180
105691020021	105691020021002	QVAR	149.40	2160.841180
105691020021	105691020021003	QVAR	156.32	2160.841180
105711040101	105711040101001	FLUOXETINE	4.20	36193.409350
105841020011	105841020011001	DULERA	361.99	4013.180526
105841020031	105841020031001	FLOVENT HFA	634.59	4013.180526
105841020051	105841020051001	ADVAIR HFA	338.76	4013.180526
106041040031	106041040031001	VENTOLIN HFA	51.81	3990.784371
106041040041	106041040041001	FLOVENT HFA	161.27	3990.784371
106041040091	106041040091001	PULMICORT	208.39	3990.784371
106181010221	106181010221001	LORATADINE	8.45	16117.924166
106181010221	106181010221002	LORATADINE	8.45	16117.924166
106181010261	106181010261001	FLOVENT HFA	201.55	16117.924166
106181010261	106181010261002	FLOVENT HFA	201.55	16117.924166
106311040091	106311040091001	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121001	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121002	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121003	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121004	VENTOLIN HFA	69.99	5282.050345
106311040121	106311040121005	VENTOLIN HFA	69.99	5282.050345
106861010441	106861010441001	ALBUTEROL	17.29	9606.341964

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
106861010451	106861010451001	BREO ELLIPTA	369.99	9606.341964
106971040081	106971040081001	MONTELUKAST	169.99	6146.902481
106971040081	106971040081002	MONTELUKAST	169.99	6146.902481
106971040081	106971040081003	MONTELUKAST	145.00	6146.902481
106971040101	106971040101001	VENTOLIN HFA	69.99	6146.902481
106971040101	106971040101002	VENTOLIN HFA	69.99	6146.902481
106971040101	106971040101003	VENTOLIN HFA	69.99	6146.902481
106971040111	106971040111001	DULERA	257.43	6146.902481
106971040111	106971040111002	DULERA	273.53	6146.902481
106971040111	106971040111003	DULERA	273.53	6146.902481
107491020011	107491020011001	SYMBICORT	269.66	3595.915312
107491020011	107491020011002	SYMBICORT	269.66	3595.915312
107491020021	107491020021001	SYMBICORT	867.12	3595.915312
107491020021	107491020021002	SYMBICORT	867.12	3595.915312
107491020041	107491020041001	SYMBICORT	867.12	3595.915312
107491020041	107491020041002	SYMBICORT	867.12	3595.915312
107491020041	107491020041003	SYMBICORT	867.12	3595.915312
107491020041	107491020041004	SYMBICORT	867.12	3595.915312
107501030011	107501030011001	MONTELUKAST	8.99	1345.088634
107501030011	107501030011002	MONTELUKAST	8.99	1345.088634
107501030031	107501030031001	SINGULAIR	218.54	1345.088634
107501030031	107501030031002	SINGULAIR	218.54	1345.088634
107501030051	107501030051001	LORATADINE	21.99	1345.088634
107501030061	107501030061001	CETIRIZINE	2.37	1345.088634
107521020311	107521020311001	MONTELUKAST	17.59	8383.447677
107521020621	107521020621001	MONTELUKAST	13.96	8383.447677
107521020621	107521020621002	MONTELUKAST	10.06	8383.447677
107521020901	107521020901001	MONTELUKAST	36.49	8383.447677
107831030572	107831030572001	PROAIR HFA	53.29	10437.059579
107861010081	107861010081001	MONTELUKAST	6.65	6178.317135
107861010081	107861010081002	MONTELUKAST	6.65	6178.317135
107861010081	107861010081003	MONTELUKAST	6.65	6178.317135
107861010081	107861010081004	MONTELUKAST	6.65	6178.317135
107861010081	107861010081005	MONTELUKAST	6.65	6178.317135
107861010081	107861010081006	MONTELUKAST	6.65	6178.317135
107932020252	107932020252001	ALBUTEROL	149.99	9453.253501
108381010491	108381010491001	PROAIR HFA	61.96	2209.546193
108381010491	108381010491002	PROAIR HFA	61.96	2209.546193
108381010491	108381010491003	PROAIR HFA	45.91	2209.546193
108381010511	108381010511001	AMLODIPINE	2.39	2209.546193
108381010511	108381010511002	AMLODIPINE	2.39	2209.546193
108381010511	108381010511003	AMLODIPINE	2.39	2209.546193
108381010581	108381010581001	MONTELUKAST	4.94	2209.546193
108381010581	108381010581002	MONTELUKAST	4.94	2209.546193
108381010581	108381010581003	MONTELUKAST	4.94	2209.546193
108801010091	108801010091001	NIFEDIPINE	80.50	10112.518455
108801010301	108801010301001	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301002	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301003	LAMOTRIGINE	147.99	10112.518455
108801010301	108801010301004	LAMOTRIGINE	147.99	10112.518455
108801010311	108801010311001	RISPERIDONE	7.00	10112.518455
108801010311	108801010311002	RISPERIDONE	7.00	10112.518455
108801010311	108801010311003	RISPERIDONE	7.00	10112.518455
108801010311	108801010311004	RISPERIDONE	7.00	10112.518455
108801010341	108801010341001	VENTOLIN HFA	70.99	10112.518455
108801010341	108801010341002	VENTOLIN HFA	70.99	10112.518455
108801010831	108801010831001	NIFEDIPINE	80.50	10112.518455
108801010831	108801010831002	NIFEDIPINE	80.50	10112.518455
108801010851	108801010851001	VENTOLIN HFA	70.99	10112.518455
108801010851	108801010851002	VENTOLIN HFA	70.99	10112.518455
108891010031	108891010031001	PROAIR HFA	51.43	19407.640425
108891010061	108891010061001	PROAIR HFA	51.43	19407.640425
108891010061	108891010061002	PROAIR HFA	53.93	19407.640425
108891010111	108891010111001	PROAIR HFA	53.93	19407.640425
108891010131	108891010131001	FLOVENT DISK	165.47	19407.640425
109272010152	109272010152001	VENTOLIN HFA	36.81	10407.529444
109391030032	109391030032001	VENTOLIN HFA	53.67	5652.752772
109501010041	109501010041001	ADVAIR HFA	336.89	4913.082157
109501010041	109501010041002	ADVAIR HFA	336.89	4913.082157
109501010041	109501010041003	ADVAIR HFA	336.89	4913.082157
109501010041	109501010041004	ADVAIR HFA	336.89	4913.082157
109501010041	109501010041005	ADVAIR HFA	336.89	4913.082157
109501010041	109501010041006	ADVAIR HFA	336.89	4913.082157
109511020031	109511020031001	PROAIR HFA	54.44	4210.153322

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
109561010021	109561010021001	MONTELUKAST	509.97	3933.951956
109561010161	109561010161001	MONTELUKAST	509.97	3933.951956
109561010161	109561010161002	MONTELUKAST	509.97	3933.951956
109561010191	109561010191001	ADVAIR DISKU	445.42	3933.951956
109561010191	109561010191002	ADVAIR DISKU	559.99	3933.951956
109561010191	109561010191003	ADVAIR DISKU	519.99	3933.951956
109561010191	109561010191004	ADVAIR DISKU	559.99	3933.951956
109561010191	109561010191005	ADVAIR DISKU	559.99	3933.951956
109561010191	109561010191006	ADVAIR DISKU	559.99	3933.951956
109561010191	109561010191007	ADVAIR DISKU	559.99	3933.951956
109561010231	109561010231001	PROAIR HFA	54.67	3933.951956
109561010331	109561010331001	MONTELUKAST	509.97	3933.951956
109561010361	109561010361001	ADVAIR DISKU	448.88	3933.951956
109561010361	109561010361002	ADVAIR DISKU	448.88	3933.951956
109561010361	109561010361003	ADVAIR DISKU	559.99	3933.951956
109631020021	109631020021001	PROVENTIL	75.31	5730.750992
109981010121	109981010121001	FLUTICASONE	10.00	10146.734172
109981010121	109981010121002	FLUTICASONE	10.00	10146.734172
110041020011	110041020011001	VENTOLIN HFA	69.99	1869.541020
110041020071	110041020071001	VENTOLIN HFA	50.31	1869.541020
110041020071	110041020071002	VENTOLIN HFA	69.99	1869.541020
110041020151	110041020151001	VENTOLIN HFA	50.31	1869.541020
110041020161	110041020161001	FLONASE ALGY	28.34	1869.541020
110181010121	110181010121001	ADVAIR HFA	341.09	5239.470523
110181010121	110181010121002	ADVAIR HFA	341.09	5239.470523
110181010131	110181010131001	FLUCONAZOLE	1.68	5239.470523
110181010131	110181010131002	FLUCONAZOLE	1.68	5239.470523
110181010141	110181010141001	COMBIVENT	300.60	5239.470523
110181010151	110181010151001	PROAIR HFA	145.98	5239.470523
110181010391	110181010391001	MONTELUKAST	11.25	5239.470523
110321010131	110321010131001	Albuterol 200D Oral	24.00	3697.159202
110321020081	110321020081001	Budesonide / Formoter (120D)	114.07	6533.058423
110321020091	110321020091001	Albuterol (200 Dose)	34.18	6533.058423
110551030051	110551030051001	VENTOLIN HFA	103.11	9439.219430
110551030091	110551030091001	VENTOLIN HFA	103.11	9439.219430
110561030011	110561030011001	MONTELUKAST	15.00	20488.495334
110561030011	110561030011002	MONTELUKAST	15.00	20488.495334
110561040011	110561040011001	MONTELUKAST	15.00	20488.495334
110561040011	110561040011002	MONTELUKAST	15.00	20488.495334
110751010121	110751010121001	ALBUTEROL	39.20	11338.108388
110751010121	110751010121002	ALBUTEROL	39.36	11338.108388
110751010131	110751010131001	INCRUSE ELPT	257.80	11338.108388
110751010141	110751010141001	SYMBICORT	297.17	11338.108388
110751010191	110751010191001	MONTELUKAST	9.80	11338.108388
110751010191	110751010191002	MONTELUKAST	6.61	11338.108388
110751010511	110751010511001	ALBUTEROL	39.36	11338.108388
110751010511	110751010511002	ALBUTEROL	39.66	11338.108388
110751010511	110751010511003	ALBUTEROL	39.66	11338.108388
110751010511	110751010511004	ALBUTEROL	39.66	11338.108388
110751010511	110751010511005	ALBUTEROL	39.51	11338.108388
110751010521	110751010521001	incruze ellipta	257.90	11338.108388
110751010521	110751010521002	INCRUSE ELPT	257.80	11338.108388
110751010521	110751010521003	INCRUSE ELPT	257.80	11338.108388
110751010521	110751010521004	INCRUSE ELPT	257.80	11338.108388
110751010521	110751010521005	INCRUSE ELPT	278.38	11338.108388
110751010531	110751010531001	SYMBICORT	297.17	11338.108388
110751010581	110751010581001	MONTELUKAST	13.22	11338.108388
110751010581	110751010581002	MONTELUKAST	6.61	11338.108388
110751010581	110751010581003	MONTELUKAST	6.61	11338.108388
110751010581	110751010581004	MONTELUKAST	6.61	11338.108388
110751010581	110751010581005	MONTELUKAST	6.61	11338.108388
110751010871	110751010871001	ALBUTEROL	39.51	11338.108388
110751010871	110751010871002	ALBUTEROL	39.51	11338.108388
110751010871	110751010871003	ALBUTEROL	39.51	11338.108388
110751010871	110751010871004	ALBUTEROL	39.51	11338.108388
110751010871	110751010871005	ALBUTEROL	39.51	11338.108388
110751010881	110751010881001	INCRUSE ELPT	278.38	11338.108388
110751010881	110751010881002	INCRUSE ELPT	278.38	11338.108388
110751010881	110751010881003	INCRUSE ELPT	278.38	11338.108388
110751010881	110751010881004	INCRUSE ELPT	278.38	11338.108388
110751010881	110751010881005	INCRUSE ELPT	303.39	11338.108388
110751010891	110751010891001	SYMBICORT	297.17	11338.108388
110751010891	110751010891002	SYMBICORT	297.17	11338.108388
110751010891	110751010891003	SYMBICORT	297.17	11338.108388

LINKIDX	RXRECIDX	RXNAME	RXXP16X	PERWT16F
110751010891	110751010891004	SYMBICORT	297.17	11338.108388
110751010891	110751010891005	SYMBICORT	297.17	11338.108388
110881020271	110881020271001	ADVAIR DISKU	333.70	3879.448304
110881020301	110881020301001	PROAIR HFA	53.04	3879.448304
110881020401	110881020401001	ADVAIR DISKU	333.70	3879.448304
110881020411	110881020411001	PROAIR HFA	54.30	3879.448304
110951010051	110951010051001	AZITHROMYCIN	5.00	11178.414637
110951010121	110951010121001	ADVAIR HFA	559.99	11178.414637
111041010011	111041010011001	QVAR	208.70	1886.831961

HC-188I
Sample SAS Job for Example B
Total Rx expenditures associated with asthma

Analysis Variable : RXXP16X SUM OF PAYMENTS RXSF16X-RXOU16X(IMPUTED)

N	Sum
9604	1550339.39

HC-188I
Sample SAS Job for Example B
Total Rx expenditures associated with asthma

Weighted

Analysis Variable : RXXP16X SUM OF PAYMENTS RXSF16X-RXOU16X(IMPUTED)

N	Sum
9604	14132163578

NOTE: Copyright (c) 2016 by SAS Institute Inc., Cary, NC, USA.

NOTE: SAS (r) Proprietary Software 9.4 (TS1M6)

NOTE: This session is executing on the X64_10PRO platform.

NOTE: SAS initialization used:

real time 0.50 seconds

cpu time 0.25 seconds

NOTE: AUTOEXEC processing beginning; file is C:\Program Files\SAS\SASMISC\autoexec_9464.sas.

NOTE: AUTOEXEC processing completed.

1
2
3
4
5
6

7 ods rtf file = 'sampleC.rtf' ;

NOTE: Writing RTF Body file: sampleC.rtf

8

9 ods noproctitle;

10

11 OPTIONS LS=132 PS=59;

12

13 %let yr=16;

14 %let evntnum=188; /* BE SURE TO UPDTE FOR CURRENT FY */

15 %let condnum=190; /* BE SURE TO UPDTE FOR CURRENT FY */

16

17 TITLE1 "HC-&evntnum.I";

18 TITLE2 "Sample SAS Job for Example C";

19

20 LIBNAME IN "C:\Data";

NOTE: Libref IN was successfully assigned as follows:

Engine: V9

Physical Name: C:\Data

21

22 *****

23 * Calculate the expenditures for medical visits associated with asthma.

24 *****;

25

PROC FORMAT;

26 VALUE EVENTYPE

27 1 = "1 MVIS"

28 2 = "2 OPAT"

```

29         3 = "3 EROM"
30         4 = "4 STAZ"
31         5 = "5 DVIS"
32         6 = "6 OMED"
33         7 = "7 HVIS"
34         8 = "8 PMED";

```

NOTE: Format EVENTYPE has been output.

```

35         RUN;

```

NOTE: PROCEDURE FORMAT used (Total process time):

real time	0.00 seconds
cpu time	0.00 seconds

```

36
37         *-----
38         * Get conditions records coded as asthma.
39         *-----;
40     DATA ASCONDS;
41         SET IN.H&condnum (KEEP=CONDDIX ICD10CDX);
42         IF ICD10CDX="J45";
43     RUN;

```

NOTE: There were 123100 observations read from the data set IN.H190.
NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.
NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.
NOTE: DATA statement used (Total process time):

real time	0.64 seconds
cpu time	0.07 seconds

```

44
45         *-----
46         * Get the events linked to each of the asthma condition records.
47         *-----;
48     PROC SORT DATA=ASCONDS; BY CONDDIX; RUN;

```

NOTE: There were 2288 observations read from the data set WORK.ASCONDS.
NOTE: SAS sort was used.
NOTE: The data set WORK.ASCONDS has 2288 observations and 2 variables.
NOTE: Compressing data set WORK.ASCONDS increased size by 100.00 percent.
Compressed is 2 pages; un-compressed would require 1 pages.
NOTE: PROCEDURE SORT used (Total process time):

real time	0.01 seconds
cpu time	0.01 seconds

```

49
50     proc print data=asconds (obs=50);
51         title3 "sample print of work.asconds - sorted by conddix";
52         title4 "COND (H&condnum) records where ICD10CDX=J45";
53     run;

```

NOTE: There were 50 observations read from the data set WORK.ASCONDS.
NOTE: The PROCEDURE PRINT printed page 1.
NOTE: PROCEDURE PRINT used (Total process time):

```
real time      0.03 seconds
cpu time       0.04 seconds
```

```
54
55      PROC SORT DATA=IN.H&evntnum.IF1 OUT=CLNK; BY CONDIDX; RUN;
```

```
NOTE: There were 363849 observations read from the data set IN.H188IF1.
NOTE: SAS threaded sort was used.
NOTE: The data set WORK.CLNK has 363849 observations and 6 variables.
NOTE: Compressing data set WORK.CLNK increased size by 5.49 percent.
      Compressed is 423 pages; un-compressed would require 401 pages.
NOTE: PROCEDURE SORT used (Total process time):
real time      0.57 seconds
cpu time       0.20 seconds
```

```
56
57      DATA ASCLNKS;
58          MERGE CLNK (IN=INCLNK KEEP=CONDIDX EVNTIDX EVENTYPE)
59              ASCONDS(IN=INASCOND KEEP=CONDIDX);
60          BY CONDIDX;
61          IF INCLNK & INASCOND;
62      RUN;
```

```
NOTE: There were 363849 observations read from the data set WORK.CLNK.
NOTE: There were 2288 observations read from the data set WORK.ASCONDS.
NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.
NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.
      Compressed is 6 pages; un-compressed would require 4 pages.
NOTE: DATA statement used (Total process time):
real time      0.08 seconds
cpu time       0.06 seconds
```

```
63
64      proc report data=asclnks (obs=75)nowd headskip;
65          define condidx / 'CONDIDX' order;
66          define evntidx / 'EVNTIDX';
67          define eventype / 'EVENTYPE';
68          break after condidx / skip;
69          format eventype eventype.;
70          title3 "sample print of work.asclnks - sorted by condidx";
71          title4 "events linked to asthma condition records";
72      run;
```

```
NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 75 observations read from the data set WORK.ASCLNKS.
NOTE: The PROCEDURE REPORT printed pages 2-4.
NOTE: PROCEDURE REPORT used (Total process time):
real time      0.02 seconds
cpu time       0.03 seconds
```

```
73
74      PROC SORT DATA=ASCLNKS; BY EVNTIDX; RUN;
```

NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
 NOTE: SAS sort was used.
 NOTE: The data set WORK.ASCLNKS has 6752 observations and 3 variables.
 NOTE: Compressing data set WORK.ASCLNKS increased size by 50.00 percent.
 Compressed is 6 pages; un-compressed would require 4 pages.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 0.01 seconds
 cpu time 0.00 seconds

```
75
76     proc print data=asclnks (obs=50);
77         format eventype eventype.;
78         title3 "sample print of work.asclnks - sorted by evtntidx";
79     run;
```

NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
 NOTE: The PROCEDURE PRINT printed page 5.
 NOTE: PROCEDURE PRINT used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

```
80
81     DATA ASCLNKS;
82         SET ASCLNKS (KEEP=EVNTIDX EVENTYPE);
83         BY EVNTIDX;
84         IF FIRST.EVNTIDX;
85     RUN;
```

NOTE: There were 6752 observations read from the data set WORK.ASCLNKS.
 NOTE: The data set WORK.ASCLNKS has 6724 observations and 2 variables.
 NOTE: Compressing data set WORK.ASCLNKS increased size by 33.33 percent.
 Compressed is 4 pages; un-compressed would require 3 pages.
 NOTE: DATA statement used (Total process time):
 real time 0.01 seconds
 cpu time 0.01 seconds

```
86
87     proc print data=asclnks (obs=50);
88         format eventype eventype.;
89         title3 "sample print of unique evtntidxs from work.asclnks";
90     run;
```

NOTE: There were 50 observations read from the data set WORK.ASCLNKS.
 NOTE: The PROCEDURE PRINT printed page 6.
 NOTE: PROCEDURE PRINT used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

```
91
92     *-----
93     * Get non-telephone office based visits (i.e. MVIS events) for persons with positive weights.
94     *-----;
95     DATA MVIS;
```

```

96      SET IN.H&evntnum.G (KEEP=EVNTIDX PERWT&yr.F SEETLKPV OBP&yr.X);
97      IF PERWT&yr.F > 0 & SEETLKPV NE 2;
98      RUN;

```

NOTE: There were 165003 observations read from the data set IN.H188G.
NOTE: The data set WORK.MVIS has 160981 observations and 4 variables.
NOTE: Compressing data set WORK.MVIS increased size by 7.07 percent.
Compressed is 106 pages; un-compressed would require 99 pages.
NOTE: DATA statement used (Total process time):

real time	1.53 seconds
cpu time	0.09 seconds

```

99
100     PROC SORT DATA=MVIS; BY EVNTIDX; RUN;

```

NOTE: There were 160981 observations read from the data set WORK.MVIS.
NOTE: SAS threaded sort was used.
NOTE: The data set WORK.MVIS has 160981 observations and 4 variables.
NOTE: Compressing data set WORK.MVIS increased size by 7.07 percent.
Compressed is 106 pages; un-compressed would require 99 pages.
NOTE: PROCEDURE SORT used (Total process time):

real time	0.06 seconds
cpu time	0.09 seconds

```

101
102     *-----
103     * Identify MVIS events which were for asthma.
104     *-----;
105     DATA ASMVIS;
106         MERGE ASCLNKS (IN=INASCLNK)
107             MVIS      (IN=INMVIS);
108         BY EVNTIDX;
109         IF INASCLNK & INMVIS;
110     RUN;

```

NOTE: There were 6724 observations read from the data set WORK.ASCLNKS.
NOTE: There were 160981 observations read from the data set WORK.MVIS.
NOTE: The data set WORK.ASMVIS has 1901 observations and 5 variables.
NOTE: Compressing data set WORK.ASMVIS increased size by 50.00 percent.
Compressed is 3 pages; un-compressed would require 2 pages.
NOTE: DATA statement used (Total process time):

real time	0.04 seconds
cpu time	0.04 seconds

```

111     proc print data=asmvis (obs=50);
112         format eventtype eventtype.;
113         title3 "sample print of work.asmvis";
114         title4 "unique evntidxs from work.asclnks that are non-telephone MVIS (HC-&evntnum.G) events";
115     run;
116

```

NOTE: There were 50 observations read from the data set WORK.ASMVIS.
NOTE: The PROCEDURE PRINT printed page 7.
NOTE: PROCEDURE PRINT used (Total process time):

```
real time      0.01 seconds
cpu time       0.01 seconds
```

```
117
118     PROC MEANS DATA=ASMVIS N SUM;
119     VAR OBP&yr.X;
120     TITLE3 "Total medical visit expenditures (excluding telephone) associated with asthma";
121     RUN;
```

```
NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 1901 observations read from the data set WORK.ASMVIS.
NOTE: The PROCEDURE MEANS printed page 8.
NOTE: PROCEDURE MEANS used (Total process time):
real time      0.00 seconds
cpu time       0.01 seconds
```

```
122
123     PROC MEANS DATA=ASMVIS N SUM;
124     VAR OBP&yr.X;
125     WEIGHT PERWT&yr.F;
126     TITLE3 "Total medical visit expenditures (excluding telephone) associated with asthma";
127     TITLE5 "Weighted";
128     RUN;
```

```
NOTE: Multiple concurrent threads will be used to summarize data.
NOTE: There were 1901 observations read from the data set WORK.ASMVIS.
NOTE: The PROCEDURE MEANS printed page 9.
NOTE: PROCEDURE MEANS used (Total process time):
real time      0.01 seconds
cpu time       0.01 seconds
```

```
129
130     ods rtf close;
131
132
```

```
NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
real time      3.79 seconds
cpu time       1.03 seconds
```

HC-188I
 Sample SAS Job for Example C
 sample print of work.asconds - sorted by condidx
 COND (H190) records where ICD10CDX=J45

Obs	CONDIDX	ICD10CDX
1	100061010021	J45
2	100081020011	J45
3	100081060011	J45
4	100191020051	J45
5	100341010121	J45
6	100791010061	J45
7	100851010021	J45
8	100851030011	J45
9	100911030031	J45
10	100921020051	J45
11	100921050012	J45
12	101071010011	J45
13	101141010031	J45
14	101161010011	J45
15	101351010041	J45
16	101491010011	J45
17	101701030011	J45
18	102171020081	J45
19	102211050011	J45
20	102221030011	J45
21	102231030011	J45
22	102251010011	J45
23	102261040011	J45
24	102331010021	J45
25	102421010071	J45
26	102431010061	J45
27	102551010031	J45
28	102551020011	J45
29	102841010011	J45
30	102961010051	J45
31	102962020012	J45
32	103101010011	J45
33	103161010241	J45
34	103181020011	J45
35	103361010041	J45
36	103631010071	J45
37	104021010021	J45
38	104131010011	J45
39	104161010041	J45
40	104161050011	J45
41	104511020181	J45
42	104611030012	J45
43	104751020011	J45
44	104751030011	J45
45	105011010161	J45
46	105051010051	J45
47	105051020021	J45
48	105252010022	J45
49	105531020051	J45
50	105571010071	J45

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Sample SAS Job for Example C
sample print of work.asclnks - sorted by condidx
events linked to asthma condition records

CONDIDX	EVNTIDX	EVENTYPE
100191020051	100191020041	8 PMED
100191020051	100191020191	8 PMED
100191020051	100191020341	1 MVIS
100341010121	100341010321	8 PMED
100791010061	100791010061	2 OPAT
100791010061	100791010071	2 OPAT
100791010061	100791010081	2 OPAT
100791010061	100791010091	1 MVIS
100791010061	100791010301	1 MVIS
100791010061	100791010421	8 PMED
100791010061	100791010521	2 OPAT
100791010061	100791010911	1 MVIS
100791010061	100791010921	1 MVIS
100791010061	100791011671	8 PMED
100921020051	100921020171	8 PMED
100921050012	100921050042	8 PMED
100921050012	100921050062	8 PMED
101071010011	101071010031	8 PMED
101141010031	101141010071	1 MVIS
101141010031	101141010081	1 MVIS
101141010031	101141010261	8 PMED
101351010041	101351010321	8 PMED
101351010041	101351010331	8 PMED
101351010041	101351010411	1 MVIS
101351010041	101351010511	8 PMED
101351010041	101351010521	8 PMED
101351010041	101351010541	8 PMED
101491010011	101491010011	8 PMED
101491010011	101491010021	8 PMED
101491010011	101491010041	8 PMED
101491010011	101491010151	8 PMED
101491010011	101491010161	8 PMED
101701030011	101701030011	3 EROM
102171020081	102171020191	8 PMED
102211050011	102211050011	3 EROM
102211050011	102211050021	8 PMED
102211050011	102211050031	3 EROM
102221030011	102221030221	8 PMED
102231030011	102231030051	8 PMED
102261040011	102261040021	8 PMED
102331010021	102331010071	8 PMED
102331010021	102331010081	8 PMED
102331010021	102331010111	8 PMED
102431010061	102431010021	1 MVIS
102431010061	102431010091	1 MVIS
102431010061	102431010141	8 PMED
102551010031	102551010091	8 PMED
102551010031	102551010161	8 PMED
102551020011	102551020011	8 PMED
102551020011	102551020021	8 PMED
102551020011	102551020031	1 MVIS
102551020011	102551020041	8 PMED
102551020011	102551020051	8 PMED
102961010051	102961010011	8 PMED
102962020012	102962020012	1 MVIS
102962020012	102962020022	1 MVIS
102962020012	102962020042	8 PMED
102962020012	102962020052	8 PMED
102962020012	102962020062	2 OPAT
102962020012	102962020072	8 PMED
102962020012	102962020082	8 PMED
103161010241	103161011811	8 PMED
103161010241	103161011821	8 PMED
103631010071	103631010071	8 PMED
103631010071	103631010241	8 PMED
104021010021	104021010521	8 PMED
104131010011	104131010161	8 PMED
104131010011	104131010791	8 PMED
104161010041	104161010051	8 PMED

CONDIDX	EVNTIDX	EVENTYPE
104161050011	104161050031	8 PMED
104611030012	104611030012	1 MVIS
104611030012	104611030052	8 PMED
104611030012	104611030062	8 PMED
104751020011	104751020041	8 PMED
104751030011	104751030061	8 PMED

HC-188I
Sample SAS Job for Example C
sample print of work.asclnks - sorted by evntidx

Obs	CONDIDX	EVNTIDX	EVENTYPE
1	100191020051	100191020041	8 PMED
2	100191020051	100191020191	8 PMED
3	100191020051	100191020341	1 MVIS
4	100341010121	100341010321	8 PMED
5	100791010061	100791010061	2 OPAT
6	100791010061	100791010071	2 OPAT
7	100791010061	100791010081	2 OPAT
8	100791010061	100791010091	1 MVIS
9	100791010061	100791010301	1 MVIS
10	100791010061	100791010421	8 PMED
11	100791010061	100791010521	2 OPAT
12	100791010061	100791010911	1 MVIS
13	100791010061	100791010921	1 MVIS
14	100791010061	100791011671	8 PMED
15	100921020051	100921020171	8 PMED
16	100921050012	100921050042	8 PMED
17	100921050012	100921050062	8 PMED
18	101071010011	101071010031	8 PMED
19	101141010031	101141010071	1 MVIS
20	101141010031	101141010081	1 MVIS
21	101141010031	101141010261	8 PMED
22	101351010041	101351010321	8 PMED
23	101351010041	101351010331	8 PMED
24	101351010041	101351010411	1 MVIS
25	101351010041	101351010511	8 PMED
26	101351010041	101351010521	8 PMED
27	101351010041	101351010541	8 PMED
28	101491010011	101491010011	8 PMED
29	101491010011	101491010021	8 PMED
30	101491010011	101491010041	8 PMED
31	101491010011	101491010151	8 PMED
32	101491010011	101491010161	8 PMED
33	101701030011	101701030011	3 EROM
34	102171020081	102171020191	8 PMED
35	102211050011	102211050011	3 EROM
36	102211050011	102211050021	8 PMED
37	102211050011	102211050031	3 EROM
38	102221030011	102221030221	8 PMED
39	102231030011	102231030051	8 PMED
40	102261040011	102261040021	8 PMED
41	102331010021	102331010071	8 PMED
42	102331010021	102331010081	8 PMED
43	102331010021	102331010111	8 PMED
44	102431010061	102431010021	1 MVIS
45	102431010061	102431010091	1 MVIS
46	102431010061	102431010141	8 PMED
47	102551010031	102551010091	8 PMED
48	102551010031	102551010161	8 PMED
49	102551020011	102551020011	8 PMED
50	102551020011	102551020021	8 PMED

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Sample SAS Job for Example C
sample print of unique evtidxs from work.asclnks

Obs	EVNTIDX	EVENTYPE
1	100191020041	8 PMED
2	100191020191	8 PMED
3	100191020341	1 MVIS
4	100341010321	8 PMED
5	100791010061	2 OPAT
6	100791010071	2 OPAT
7	100791010081	2 OPAT
8	100791010091	1 MVIS
9	100791010301	1 MVIS
10	100791010421	8 PMED
11	100791010521	2 OPAT
12	100791010911	1 MVIS
13	100791010921	1 MVIS
14	100791011671	8 PMED
15	100921020171	8 PMED
16	100921050042	8 PMED
17	100921050062	8 PMED
18	101071010031	8 PMED
19	101141010071	1 MVIS
20	101141010081	1 MVIS
21	101141010261	8 PMED
22	101351010321	8 PMED
23	101351010331	8 PMED
24	101351010411	1 MVIS
25	101351010511	8 PMED
26	101351010521	8 PMED
27	101351010541	8 PMED
28	101491010011	8 PMED
29	101491010021	8 PMED
30	101491010041	8 PMED
31	101491010151	8 PMED
32	101491010161	8 PMED
33	101701030011	3 EROM
34	102171020191	8 PMED
35	102211050011	3 EROM
36	102211050021	8 PMED
37	102211050031	3 EROM
38	102221030221	8 PMED
39	102231030051	8 PMED
40	102261040021	8 PMED
41	102331010071	8 PMED
42	102331010081	8 PMED
43	102331010111	8 PMED
44	102431010021	1 MVIS
45	102431010091	1 MVIS
46	102431010141	8 PMED
47	102551010091	8 PMED
48	102551010161	8 PMED
49	102551020011	8 PMED
50	102551020021	8 PMED

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Sample SAS Job for Example C
sample print of work.asmvis
unique evtidxs from work.asclnks that are non-telephone MVIS (HC-188G) events

Obs	EVNTIDX	EVENTYPE	SEETLKPV	OBXP16X	PERWT16F
1	100191020341	1 MVIS	1	198.00	10510.93
2	100791010091	1 MVIS	1	642.05	12227.44
3	100791010301	1 MVIS	1	104.32	12227.44
4	100791010911	1 MVIS	1	134.00	12227.44
5	100791010921	1 MVIS	1	69.00	12227.44
6	101141010071	1 MVIS	1	292.84	11003.34
7	101141010081	1 MVIS	1	229.00	11003.34
8	101351010411	1 MVIS	1	441.00	45881.55
9	102431010021	1 MVIS	1	65.06	5931.09
10	102431010091	1 MVIS	1	54.19	5931.09
11	102551020031	1 MVIS	1	0.00	3399.47
12	102962020012	1 MVIS	1	62.08	3608.90
13	102962020022	1 MVIS	1	62.08	3608.90
14	104611030012	1 MVIS	1	345.00	13225.22
15	105691020011	1 MVIS	1	69.59	2160.84
16	106041040021	1 MVIS	1	77.15	3990.78
17	106311040051	1 MVIS	1	95.83	5282.05
18	106311040081	1 MVIS	1	48.07	5282.05
19	106311040101	1 MVIS	1	19.51	5282.05
20	106511020071	1 MVIS	1	1965.12	12197.49
21	106971040131	1 MVIS	1	6.11	6146.90
22	106971040141	1 MVIS	1	6.11	6146.90
23	106971040151	1 MVIS	1	6.11	6146.90
24	106971040171	1 MVIS	1	7.10	6146.90
25	107011010571	1 MVIS	1	200.90	2013.82
26	107011010581	1 MVIS	1	178.51	2013.82
27	107011010591	1 MVIS	1	200.90	2013.82
28	107011010601	1 MVIS	1	48.13	2013.82
29	107011010611	1 MVIS	1	47.65	2013.82
30	107011010621	1 MVIS	1	375.73	2013.82
31	107011010631	1 MVIS	1	380.31	2013.82
32	107011010641	1 MVIS	1	145.32	2013.82
33	107011010651	1 MVIS	1	122.09	2013.82
34	107011030051	1 MVIS	1	67.62	1878.76
35	107501030021	1 MVIS	1	118.12	1345.09
36	107591010021	1 MVIS	1	178.95	7720.68
37	107591010101	1 MVIS	1	111.90	7720.68
38	107591010111	1 MVIS	1	56.89	7720.68
39	107591010121	1 MVIS	1	111.90	7720.68
40	107591010131	1 MVIS	1	111.90	7720.68
41	107591010141	1 MVIS	1	59.71	7720.68
42	107591010251	1 MVIS	1	243.85	7720.68
43	107591010261	1 MVIS	1	126.08	7720.68
44	107591010271	1 MVIS	1	111.90	7720.68
45	107591010281	1 MVIS	1	75.92	7720.68
46	107591010291	1 MVIS	1	98.21	7720.68
47	107831030582	1 MVIS	1	88.40	10437.06
48	107932020012	1 MVIS	1	64.84	9453.25
49	108501040011	1 MVIS	1	127.47	14494.05
50	108801010101	1 MVIS	1	29.34	10112.52

HC-188I
Sample SAS Job for Example C
Total medical visit expenditures (excluding telephone) associated with asthma
Analysis Variable : OBXP16X SUM OF OBSF16X - OBOT16X (IMPUTED)

N	Sum
1901	301092.55

HC-188I
Sample SAS Job for Example C
Total medical visit expenditures (excluding telephone) associated with asthma
Weighted

Analysis Variable : OBXP16X SUM OF OBSF16X - OBOT16X (IMPUTED)

N	Sum
1901	2974136754