

# Saskatoon User Centered Community Enriched SAS Society



## Things Dr. Johnson Never Told Me: An Introduction To SAS Dictionary Tables

---

**Peter Eberhardt**  
**Fernwood Consulting Group Inc.**



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

# Agenda

1. Overview of Dictionary Tables
2. Detail on selected Dictionary Tables
3. Review

**SUCCESS – May 13, 2008**

**Peter Eberhardt  
Fernwood Consulting Group Inc.**



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables



SU



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

# Quiz Time

- VIEW
- METADATA
- OPTIONS
- DICTIONARY

**SUCCESS – May 13, 2008**

**Peter Eberhardt  
Fernwood Consulting Group Inc.**



# Dictionary

1. a reference book containing words usually alphabetically arranged along with information about their forms, pronunciations, functions, etymologies, meanings, and syntactical and idiomatic uses
2. a reference book listing alphabetically terms or names important to a particular subject or activity along with discussion of their meanings and applications
3. a reference book giving for words of one language equivalents in another
4. a list (as of items of data or words) stored in a computer for reference (as for information retrieval or word processing)



# Dictionary Tables

- Always available
- Maintained by SAS
- Read Only
- Have information on virtually every aspect of your SAS session
- Two ways to access them
  1. base table
  2. SASHELP views



## What Tables are Available

### ■ V8

- 11 DICTIONARY tables
- 17 SASHELP views

### ■ V9.13

- 22 DICTIONARY tables
- 30 SASHELP views



# Accessing Dictionary Tables

## PROC SQL:

### ■ Base Table

```
select *  
from dictionary.columns
```

### ■ SAS View

```
select *  
from sashelp.vcolumn
```



# Accessing Dictionary Tables

DATA or PROC step:

## ■ SAS View

```
PROC print data = SASHELP.VCOLUMN;  
RUN;
```

```
DATA columns;  
    set SASHELP.VCOLUMN;  
RUN;
```



## What Tables are Available in V8

Table	Description
CATALOGS	Information about SAS catalogs
COLUMNS	SAS dataset/table variable/column info
EXTFILES	Information about external files
INDEXES	Columns participating in indexes
MACROS	Information about macro variables
MEMBERS	Information common to all memtypes
OPTIONS	Session options
STYLES	ODS Styles
TABLES	Information about datasets/tables
TITLES	Information about titles, footnotes
VIEWS	Information about views

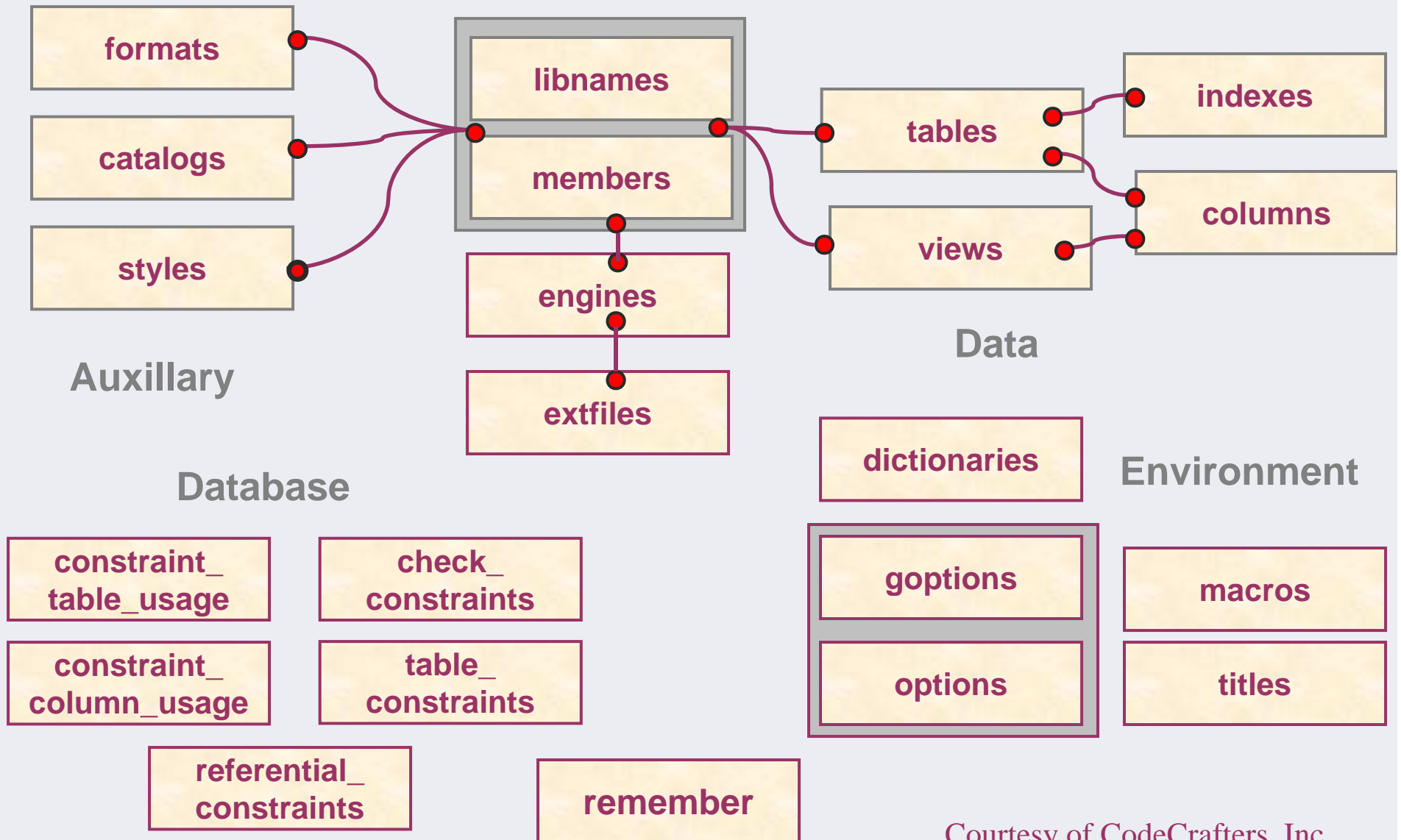


## What Tables are Added in V9

Table	Description
CHECK_CONSTRAINTS	Check constraints
CONSTRAINT_COLUMN_USAGE	Constraint column usage
CONSTRAINT_TABLE_USAGE	Constraint table usage
DICTIONARIES	DICTIONARY tables and their columns
ENGINES	Available engines
FORMATS	Available formats
GOPTIONS	SAS/Graph options
LIBNAMES	LIBNAME information
REFERENTIAL_CONSTRAINTS	Referential constraints
REMEMBER	Text to be remembered
TABLE_CONSTRAINTS	Table constraints

# TABLE GROUPINGS AND RELATIONSHIPS (V9)

Things Dr Johnson Never Told Me:  
An Introduction To SAS Dictionary Tables



Courtesy of CodeCrafters, Inc



## What Tables are Available

```
proc sql;  
create table tables as  
select *  
from dictionary.dictionaries  
;  
quit;
```



## What Views are Available

```
proc sql;
```

```
create table views as
```

```
select distinct memname
```

```
from sashelp.vsvview
```

```
where libname='SASHELP'
```

```
and memname like 'V%'
```

```
; quit;
```



## What is the Table Structure

```
proc sql;
```

```
describe table DICTIONARY.OPTIONS;
```

```
quit;
```



## What is the Table Structure

NOTE: SQL table DICTIONARY.OPTIONS was created like:

```
create table DICTIONARY.OPTIONS
```

```
(  
  optname char(32) label='Option Name',  
  opttype char(8) label='Option type',  
  setting char(1024) label='Option Setting',  
  optdesc char(160) label='Option Description',  
  level char(8) label='Option Location',  
  group char(32) label='Option Group'  
);
```



## How was the VIEW Created

```
proc sql;  
describe view SASHELP.VOPTION;  
quit;
```



## How was the VIEW Created

NOTE: SQL view SASHELP.VOPTION is defined as:

```
select *  
  from DICTIONARY.OPTIONS;
```



## How was the VIEW Created

NOTE: SQL view SASHELP.VSTABLE is defined as:

```
select libname, memname
      from DICTIONARY.MEMBERS
      where memtype='DATA'
      order by libname asc, memname asc;
```



## How Can I Use Dictionary Tables

- Change style of RTF output
- Search for common columns in a library
- Search for common columns but different characteristic
- Select columns with specific attributes



## How Can I Use Dictionary Tables

- Resetting TITLES or FOOTNOTES
- External Files
- Libraries and Tables
- Macro Variables
- Remembered Text



## What is the Table Structure

```
proc sql;
```

```
describe table DICTIONARY.STYLES;
```

```
quit;
```



## What is the Table Structure

```
proc sql;
describe table dictionary.styles;
NOTE: SQL table DICTIONARY.STYLES was created like:
create table DICTIONARY.STYLES (
  libname char(8) label='Library Name',
  memname char(32) label='Member Name',
  style char(32) label='Style Name',
  crdate num format=DATETIME informat=DATETIME
          label='Date Created'
); quit;
```



## How was the VIEW Created

```
proc sql;  
describe view SASHELP.VSTYLE;  
quit;
```



## How was the VIEW Created

NOTE: SQL view SASHELP.VSTYLE is defined as:

```
select *  
  from DICTIONARY.STYLES;
```



## What STYLES are available?

```
PROC SQL;
```

```
SELECT *
```

```
FROM dictionary.styles;
```

```
QUIT;
```



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [Output - (Untitled)]

File Edit View Tools Solutions Window Help

The SAS System 16:55 Sunday, August 20, 2006 1

Library Name	Member Name	Style Name	Date Created
SASHELP	TMPLMST	Styles.Analysis	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Astronomy	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Banker	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.BarrettsBlue	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Beige	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Brick	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Brown	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Curve	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.D3d	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Default	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.EGDefault	20FEB06:15:55:27
SASHELP	TMPLMST	Styles.Education	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Electronics	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Festival	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.FestivalPrinter	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Gears	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Journal	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Magnify	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Meadow	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.MeadowPrinter	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Minimal	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Money	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.NoFontDefault	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Normal	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.NormalPrinter	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Printer	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Rsvp	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Rtf	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Sasweb	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Sasweb2	20FEB06:15:55:20
SASHELP	TMPLMST	Styles.Science	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Seaside	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Sketch	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Statdoc	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Statistical	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Theme	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.Torn	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.Watercolor	20FEB06:15:55:22
SASHELP	TMPLMST	Styles.blockPrinter	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.fancyPrinter	20FEB06:15:55:21
SASHELP	TMPLMST	Styles.sansPrinter	20FEB06:15:55:21

Output - (Untitled) Log - (Untitled) Multiple\_columns.sas testingcode.sas

C:\Documents and Settings\jbrill

SUCCESS - May 13, 2006

hardt  
Fernwood Consulting Group Inc.



# Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [Explorer]

File Edit View Tools Solutions Window Help

SAS Environment

Libraries

- Sashelp
  - Ac
  - Afclass
  - Aftools
  - Analyst
  - Appview
  - Assist
  - Banlyst
  - Base
  - C0c0c
  - C0g0g
  - C0o0o
  - C1515
  - C1111
  - Cards
  - Cartog
  - Classes
  - Cmp
  - Cmrgen
  - Connect
  - Core
  - Coreprn
  - Datafmt
  - Datamrk
  - Dbimex
  - Devices
  - Dgdevice
  - Dispatc
  - Dmcl
  - Draft
  - Dscope
  - Efi
  - Eis
  - Eisbol1
  - Eisgrph
  - Eisv

Contents of 'Sashelp'

Name	Size	Type	Description	Modified
Verbmgr	17.0KB	Table		13May04:08:14:06
Vextfl	5.0KB	View		13May04:01:16:56
Vformat	5.0KB	View		13May04:01:17:02
Vgopt	5.0KB	View		13May04:01:17:04
Video	53.0KB	Catalog		13May04:01:22:44
Vidmsg	33.0KB	Table		13May04:08:18:00
Viewpt	21.0KB	Catalog		13May04:01:03:32
Vindex	5.0KB	View		13May04:01:17:10
Vlibnam	5.0KB	View		13May04:01:17:12
Vmacro	5.0KB	View		13May04:01:17:18
Vmember	5.0KB	View		13May04:01:17:22
Voption	5.0KB	View		13May04:01:17:26
Vrefcon	5.0KB	View		13May04:01:17:32
Vrememb	5.0KB	View		13May04:01:17:34
Vsaccs	5.0KB	View		13May04:01:17:38
Vscatlg	5.0KB	View		13May04:01:17:42
Vslib	5.0KB	View		13May04:01:17:46
Vstable	5.0KB	View		13May04:01:17:52
Vstabvw	5.0KB	View		13May04:01:17:58
Vstyle	5.0KB	View		13May04:01:18:00
Vsview	5.0KB	View		13May04:01:18:06
Vtabcon	5.0KB	View		13May04:01:18:06
Vtable	5.0KB	View		13May04:01:18:14
Vtitle	5.0KB	View		13May04:01:18:14
Vview	5.0KB	View		13May04:01:18:20
Webeis	837.0KB	Catalog		26Jan06:00:39:08
Webmsg	129.0KB	Table		13May04:08:18:24
Webprog	33.0KB	Catalog		13May04:01:23:42
Webutil	57.0KB	Catalog		13May04:01:23:22
Windows	65.0KB	Catalog		13May04:01:31:38
Wingdv0	1009.0KB	Catalog		26Jan06:00:38:30
Wizard	213.0KB	Catalog		13May04:00:10:24
Workers	5.0KB	Table		13May04:08:09:56

Output - (Untitled) Log - (Untitled) Multiple\_columns.sas testingcode.sas Explorer

C:\Documents and Settings\jbrill

**SUCCESS – May 13, 2008**

**Fernwood Consulting Group Inc.**



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [VIEWTABLE: Sashelp.vstyle]

File Edit View Tools Data Solutions Window Help

	libname	memname	style	crdate
1	SASHELP	TMPLMST	Styles.Analysis	20FEB06:15:55:21
2	SASHELP	TMPLMST	Styles.Astronomy	20FEB06:15:55:21
3	SASHELP	TMPLMST	Styles.Banker	20FEB06:15:55:21
4	SASHELP	TMPLMST	Styles.BarrettsBlue	20FEB06:15:55:21
5	SASHELP	TMPLMST	Styles.Beige	20FEB06:15:55:21
6	SASHELP	TMPLMST	Styles.Brick	20FEB06:15:55:21
7	SASHELP	TMPLMST	Styles.Brown	20FEB06:15:55:21
8	SASHELP	TMPLMST	Styles.Curve	20FEB06:15:55:21
9	SASHELP	TMPLMST	Styles.D3d	20FEB06:15:55:21
10	SASHELP	TMPLMST	Styles.Default	20FEB06:15:55:21
11	SASHELP	TMPLMST	Styles.EGDefault	20FEB06:15:55:27
12	SASHELP	TMPLMST	Styles.Education	20FEB06:15:55:21
13	SASHELP	TMPLMST	Styles.Electronics	20FEB06:15:55:21
14	SASHELP	TMPLMST	Styles.Festival	20FEB06:15:55:22
15	SASHELP	TMPLMST	Styles.FestivalPrinter	20FEB06:15:55:22
16	SASHELP	TMPLMST	Styles.Gears	20FEB06:15:55:21
17	SASHELP	TMPLMST	Styles.Journal	20FEB06:15:55:21
18	SASHELP	TMPLMST	Styles.Magnify	20FEB06:15:55:21
19	SASHELP	TMPLMST	Styles.Meadow	20FEB06:15:55:22
20	SASHELP	TMPLMST	Styles.MeadowPrinter	20FEB06:15:55:22
21	SASHELP	TMPLMST	Styles.Minimal	20FEB06:15:55:21
22	SASHELP	TMPLMST	Styles.Money	20FEB06:15:55:21
23	SASHELP	TMPLMST	Styles.NoFontDefault	20FEB06:15:55:21
24	SASHELP	TMPLMST	Styles.Normal	20FEB06:15:55:22
25	SASHELP	TMPLMST	Styles.NormalPrinter	20FEB06:15:55:22
26	SASHELP	TMPLMST	Styles.Printer	20FEB06:15:55:21
27	SASHELP	TMPLMST	Styles.Rsvp	20FEB06:15:55:21
28	SASHELP	TMPLMST	Styles.Rtf	20FEB06:15:55:21
29	SASHELP	TMPLMST	Styles.Sasweb	20FEB06:15:55:21
30	SASHELP	TMPLMST	Styles.Sasweb2	20FEB06:15:55:20
31	SASHELP	TMPLMST	Styles.Science	20FEB06:15:55:21
32	SASHELP	TMPLMST	Styles.Seaside	20FEB06:15:55:22
33	SASHELP	TMPLMST	Styles.Sketch	20FEB06:15:55:21
34	SASHELP	TMPLMST	Styles.Statdoc	20FEB06:15:55:21

Output - (Untitled) Log - (Untitled) testingcode.sas Explorer VIEWTABLE: Sashelp.V... C:\Documents and Settings\jbrill

**SUCCESS – May 13, 2008**

**Fernwood Consulting Group Inc.**



## How Can I Use Dictionary Tables

- Change style of RTF output
  - STYLES table

```
ods rtf file='C:\anal_blue.rtf' style=BarrettsBlue;  
ods rtf file='C:\anal_brick.rtf' style=Brick;
```



## How Can I Use Dictionary Tables

```
%macro
  setStyle(style=Default,type=html,body=c:\temp\Peter.html);
%let style=%upcase(&style);
%let checkStyle = STYLES.&style ;
proc sql noprint;
SELECT *
FROM dictionary.styles
where upcase(style)="&checkStyle";
%let found=&sql0BS;
QUIT;
```

**SUCCESS – May 13, 2008**

**Peter Eberhardt**  
**Fernwood Consulting Group Inc.**



## How Can I Use Dictionary Tables

```
%if &found=0  
  %then %let style=Default;  
ods &type style=&style body="&body";  
  
%mend;  
  
%setstyle(style=BarretsBlue);  
  
...  
ods html close;
```



## How Can I Use Dictionary Tables

### ■ Search for common columns in a library

- COLUMNS table

```
PROC SQL;
```

```
select name, count(*) as occurrences
```

```
from dictionary.columns
```

```
where libname = 'IN'
```

```
group by name
```

```
having count(*) > 1
```

```
order by name; QUIT;
```



Things Dr Johnson Never Told Me:  
An Introduction To SAS Dictionary Tables

## How Can I Use Dictionary Tables

- Search for common columns but different characteristics

**SUCCESS – May 13, 2008**

**Peter Eberhardt  
Fernwood Consulting Group Inc.**



## How Can I Use Dictionary Tables

- Search for common columns in a library

- COLUMNS table

```
PROC SQL;
```

```
create table MultiColCnt as
```

```
select name, count(*) as occurrences
```

```
from dictionary.columns
```

```
where libname in ('IN')
```

```
group by upcase(name)
```

```
having count(*) > 1
```

```
order by name;
```



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

The screenshot shows the SAS Explorer interface. The left pane displays the 'SAS Environment' tree with 'Libraries' expanded to show a list of folders. The right pane, titled 'Contents of 'n'', displays a table of dictionary tables.

Name	Size	Type	Description	Modified
Physical	65.0KB	Table		15Sep05:17:39:10
Table_a	193.0KB	Table		15Sep05:17:39:11
Table_b	145.0KB	Table		15Sep05:17:39:12
Table_c	145.0KB	Table		15Sep05:17:39:13
Table_d	65.0KB	Table		15Sep05:17:39:14
Table_f	465.0KB	Table		15Sep05:17:39:15
Table_h	145.0KB	Table		15Sep05:17:39:16

**SUCCESS – May 13, 2008**

Robert L. Johnson  
Fernwood Consulting Group Inc.



## How Can I Use Dictionary Tables

```
PROC SQL;  
create table MultiColTables as  
select c.name, c.libname, c.memname, c.type, c.length,  
       c.label, c.format  
from dictionary.columns as c, MultiColCnt as m  
Where m.name = c.name  
and c.libname in ('IN')  
order by upcase(c.name), c.libname, c.memname;  
quit;
```



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

Multiple\_columns.rtf - Microsoft Word

File Edit View Insert Format Tools Table Window Help

Type a question for help

100% Times New Roman 12 B I U

05:24 Sunday, August 20, 2006 1

*CRWH Nutrition Study - Checks for columns with same name in more than 1 data set*

name	libname	memname	type	length	label	format
BatchTrack	IN	PHYSICAL	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_A	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_B	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_C	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_D	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_F	char	30	BatchTrack	\$30.
BatchTrack	IN	TABLE_H	char	30	BatchTrack	\$30.
DK	IN	TABLE_C	num	8	DK	12.
DK	IN	TABLE_D	num	8	DK	11.
DataGrp_1	IN	PHYSICAL	char	14	DataGrp_1	\$14.
DataGrp_1	IN	TABLE_A	char	18	DataGrp_1	\$18.
DataGrp_1	IN	TABLE_B	char	18	DataGrp_1	\$18.
DataGrp_1	IN	TABLE_C	char	18	DataGrp_1	\$18.
DataGrp_1	IN	TABLE_D	char	18	DataGrp_1	\$18.
DataGrp_1	IN	TABLE_F	char	18	DataGrp_1	\$18.
DataGrp_1	IN	TABLE_H	char	18	DataGrp_1	\$18.
STUDYID	IN	PHYSICAL	char	3	STUDYID	\$3.
STUDYID	IN	TABLE_A	char	3	STUDYID	\$3.
VISIT	IN	PHYSICAL	num	8	VISIT	6.
VISIT	IN	TABLE_A	num	8	VISIT	6.



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

```
SAS - [Mergedata.sas]
File Edit View Tools Run Solutions Window Help

data physical(drop=VISIT idyear idmo idday);

  set in.physical(drop=BatchTrack DataGrp_1);
  if VISIT=0;

  length idyear $ 4 idmo $ 2 idday $ 2;

  idyear=put(interview_yr,z4.);
  idmo=put(interview_mo,z2.);
  idday=put(interview_dy,z2.);
  attrib DataGrp_1 length=$18 format=$18. informat=$18. label='DataGrp_1';

  DataGrp_1=studyid||"-"||idmo||"/"||idday||"/"||idyear;
run;

proc sort data=physical(drop=studyid); by DataGrp_1; run;
proc sort data=in.table_a out=table_a(drop=BatchTrack); by DataGrp_1; run;
proc sort data=in.table_b out=table_b(drop=BatchTrack); by DataGrp_1; run;
proc sort data=in.table_c out=table_c(drop=BatchTrack); by DataGrp_1; run;
proc sort data=in.table_d out=table_d(drop=BatchTrack DK); by DataGrp_1; run;
proc sort data=in.table_f out=table_f(drop=BatchTrack); by DataGrp_1; run;
proc sort data=in.table_h out=table_h(drop=BatchTrack); by DataGrp_1; run;

data in.nutrition_base;
  file print;
  merge physical(in=p) table_a(in=a) table_b(in=b) table_c(in=c) table_d(in=d) table_f(in=f) table_h(in=h);
  by DataGrp_1;
  if p=0 or a=0 or b=0 or c=0 or d=0 or f=0 or h=0 then put p= a= b= c= d= f= h= DataGrp_1;
run;

ods rtf close;
```

SUCCESS – May 13, 2008

Dr. Robert Eberhardt  
Fernwood Consulting Group Inc.



## How Can I Use Dictionary Tables

- Final objective: To merge multiple data sets
- Identify common columns to avoid overwriting data during merge
- Drop unnecessary columns before merge
- Retain common column used in BY statement
- If different characteristics then change to uniform characteristics before merge



## How Can I Use Dictionary Tables

- Select type character columns from a SAS data set in a library

- COLUMNS table

```
proc sql;
```

```
create table varname as
```

```
select name from dictionary.columns
```

```
where memname in ('CHARDATA') and memtype in  
('DATA') and libname in ('OUT')
```

```
and type in ('char') and 2 <= varnum <= 5
```

```
;
```



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [VIEWTABLE: Out.Chardata]

File Edit View Tools Data Solutions Window Help

	unused	make	up	some	word	not	used
1		1 NA	433	290	16	18	4555
2		2 12	NA	4565	566	34435	4556
3		3 1	34	NA	67	3439	43
4		4 333	20	456	NA	90	90000

Output - (Untitled) Log - (Untitled) Explorer char\_to\_num\_ver2.sas VIEWTABLE: Out.Chard...

NOTE: Table has been opened in browse mode.

C:\Documents and Settings\ibrill

**SUCCESS – May 13, 2008**

Robert Eberhardt  
Fernwood Consulting Group Inc.



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [VIEWTABLE: Sashelp.Vcolumn]

File Edit View Tools Data Solutions Window Help

	libname	memname	memtype	name	type	length	npos	varnum	label
1	OUT	CHARDATA	DATA	unused	num	4	0	1	
2	OUT	CHARDATA	DATA	make	char	3	4	2	
3	OUT	CHARDATA	DATA	up	char	3	7	3	
4	OUT	CHARDATA	DATA	some	char	4	10	4	
5	OUT	CHARDATA	DATA	word	char	4	14	5	
6	OUT	CHARDATA	DATA	not	char	6	18	6	
7	OUT	CHARDATA	DATA	used	char	6	24	7	
8	OUT	NUMDATA	DATA	unused	num	4	32	1	
9	OUT	NUMDATA	DATA	make	num	8	0	2	
10	OUT	NUMDATA	DATA	up	num	8	8	3	
11	OUT	NUMDATA	DATA	some	num	8	16	4	
12	OUT	NUMDATA	DATA	word	num	8	24	5	
13	OUT	NUMDATA	DATA	not	char	6	36	6	
14	OUT	NUMDATA	DATA	used	char	6	42	7	
15	SASHELP	ADOMSG	DATA	MSGID	num	8	0	1	
16	SASHELP	ADOMSG	DATA	MNEMONIC	char	32	12	2	
17	SASHELP	ADOMSG	DATA	LINENO	num	4	8	3	
18	SASHELP	ADOMSG	DATA	LEVEL	char	1	44	4	
19	SASHELP	ADOMSG	DATA	TEXT	char	200	45	5	
20	SASHELP	ADOMSG	DATA	PBUTTONS	char	35	245	6	
21	SASHELP	ADSMMSG	DATA	MSGID	num	8	0	1	
22	SASHELP	ADSMMSG	DATA	MNEMONIC	char	32	12	2	
23	SASHELP	ADSMMSG	DATA	LINENO	num	4	8	3	
24	SASHELP	ADSMMSG	DATA	LEVEL	char	1	44	4	
25	SASHELP	ADSMMSG	DATA	TEXT	char	200	45	5	
26	SASHELP	ADSMMSG	DATA	PBUTTONS	char	35	245	6	
27	SASHELP	AFMSG	DATA	MSGID	num	8	0	1	
28	SASHELP	AFMSG	DATA	MNEMONIC	char	32	13	2	
29	SASHELP	AFMSG	DATA	LINENO	num	5	8	3	
30	SASHELP	AFMSG	DATA	LEVEL	char	1	45	4	
31	SASHELP	AFMSG	DATA	TEXT	char	200	46	5	
32	SASHELP	AFMSG	DATA	PBUTTONS	char	35	246	6	
33	SASHELP	AIR	DATA	DATE	num	8	0	1	
34	SASHELP	AIR	DATA	AIR	num	8	8	2	international airline travel (thou...

Output - (Untitled) Log - (Untitled) char\_to\_num\_ver2.sas Explorer VIEWTABLE: Sashelp.V... C:\Documents and Settings\jbrill

SUCCESS - May 13, 2008

erhardt  
Fernwood Consulting Group Inc.



## How Can I Use Dictionary Tables

```
proc sql noprint;
select name into :numlist separated by ' '
from dictionary.columns
where memname in ('CHARDATA') and
      memtype in ('DATA') and libname in ('OUT')
      and type in ('char') and 2 <= varnum <= 5;
quit;

data varlist; set varname;
charname=left(trim(substr(name,1,32)))||"old"; run;
```



## How Can I Use Dictionary Tables

```
proc sql noprint;  
select charname into :charlist separated by ' '  
from varlist;  
quit;
```

```
data renlist;  
set varlist;  
rename='rename '||left(trim(name))||  
      '='||left(trim(charname))||';';  
run;
```



## How Can I Use Dictionary Tables

```
proc sql noprint;  
select rename into :renlist separated by ' '  
from renlist;  
quit;
```

```
data chardata; set out.chardata;  
&renlist  
run;
```



## How Can I Use Dictionary Tables

```
data numdata; set chardata;
array charv {*} &charlist;
array numv {*} &numlist;

do i=1 to dim(charv);
  if charv{i}='NA' then charv{i}=' ';
  numv{i}=input(charv{i},4.);
end;
drop &charlist i;
run;
```



## How Can I Use Dictionary Tables

```
data out.numdata;  
retain unused &numlist not used;  
set numdata;  
run;
```



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

SAS - [VIEWTABLE: Out.Numdata]

File Edit View Tools Data Solutions Window Help

	unused	make	up	some	word	not	used
1	1		433	290	16	18	4555
2	2	12		4565	566	34435	4556
3	3	1	34		67	3439	43
4	4	333	20	456		90	90000

Output - (Untitled) Log - (Untitled) char\_to\_num\_ver2.sas Explorer VIEWTABLE: Out.Numd... C:\Documents and Settings\ibrill

NOTE: Table has been opened in browse mode.

**SUCCESS - May 13, 2008**

erhardt  
Fernwood Consulting Group Inc.



## How Can I Use Dictionary Tables

- Final objective: changes NA values to blank and converts character columns to numeric columns
- Renames selected character type columns to same name plus appends “OLD” to end of name
- Uses INPUT function for character to numeric value conversion
- New numeric column names - same name as original column names
- Drops altered named character columns (xxxOLD)



# How Can I Use Dictionary Tables

- Resetting TITLES or FOOTNOTES
  - TITLES table



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES

1. Save the current set to titles and footnotes

```
DATA __oldtitles;  
    set sashelp.vtitle;  
  
RUN;
```

2. Set your own titles and footnotes



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES ...cont

3. Restore the previous titles and footnotes

```
DATA _null_;  
    SET __oldtitles END=done;  
    length title $12.;  
    length newtext $258.;  
    anum = compress(put(number, 2.));  
    newtext = "'" || text;  
    l = length(newtext);  
    substr(newtext, l+1,1) = "'";
```



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES ...cont

```
if type = "T"
then
do;
title = "TITLE" || anum;
titletext = title || newtext;
/* TITLE1 "This is the original Title"; */
call symput(title, titletext);
end;
```



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES ...cont

```
else if type = "F"  
  then do;  
    title = "FOOTNOTE" || anum;  
    titletext = title || newtext;  
    call symput(title, text);  
  end;
```



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES ...cont

```
if done
```

```
then
```

```
do;
```

```
    call symput("titlevars", put(_n_, 2.));
```

```
end;
```

```
run;
```



## How Can I Use Dictionary Tables

### ■ Resetting TITLES or FOOTNOTES ...cont

```
%do i = 1 %to &titlevars;
```

```
  &&title&i;
```

```
  %symdel title&i;
```

```
%end;
```

```
%symdel titlevars;
```



## How Can I Use Dictionary Tables

### ■ Documentation (External Files)

1. Get the path of an external file for a FOOTNOTE

```
PROC SQL;  
SELECT xpath into :path  
FROM DICTIONARY.EXTFILES  
WHERE fileref = "MYFILEREf=" ;  
quit;  
  
%let path = %trim(&path);  
FOOTNOTE "Data were read from &path";
```



## How Can I Use Dictionary Tables

### ■ Documentation (libraries and tables)

2. Get the path and creation date for a dataset

```
PROC SQL;
```

```
SELECT l.path, t.crdate, t.moddate
```

```
into :path, :crdate, :moddate
```

```
FROM DICTIONARY.libnames as l inner join
```

```
DICTIONARY.tables as t
```

```
ON l.libname = t.libname
```

```
AND l.libname = "WORK"
```

```
AND t.memname = "TEST";
```

**SUCCESS** – May 13, 2008

Peter Eberhardt  
Fernwood Consulting Group Inc.



## How Can I Use Dictionary Tables

### ■ Clearing GLOBAL macro variables

```
proc sql noprint;
select name into :globals separated by ' '
from dictionary.macros
where offset = 0
      and scope = "GLOBAL"
;
quit;
%symdel &globals;
```



# How Can I Use Dictionary Tables

## ■ Remembering Things

```
PROC SQL;  
CREATE VIEW REMEMBER AS  
SELECT *  
FROM SASHELP.CLASS  
remembering ('some text')  
;
```



## REVIEW

### ■ Dictionary Tables

- Always available
- Read only
- Cover virtually every aspect of your SAS session
- Accessible though SQL or data step



## Things Dr Johnson Never Told Me: An Introduction To SAS Dictionary Tables

# REVIEW

<b>Feature</b>	<b>Dictionary Tables</b>	<b>Xbox</b>
<b>Remembers what you tell it</b>	<b>YES</b>	<b>NO</b>
<b>Easy to query</b>	<b>YES</b>	<b>NO</b>
<b>Fun to use</b>	<b>YES</b>	<b>YES</b>
<b>Makes programming easier</b>	<b>YES</b>	<b>NO</b>
<b>Lets you play DOOM</b>	<b>YES *</b>	<b>YES</b>
<b>* actually NO, but it does free up your time so you can play</b>		

**SUCCESS – May 13, 2008**

**Peter Eberhardt  
Fernwood Consulting Group Inc.**



Things Dr Johnson Never Told Me:  
An Introduction To SAS Dictionary Tables

# TIME'S UP ??Questions??

**Peter Eberhardt**  
**Fernwood Consulting Group Inc.**  
**peter@fernwood.ca**  
**[www.fernwood.ca](http://www.fernwood.ca)**

**SUCCESS – May 13, 2008**

**Peter Eberhardt**  
**Fernwood Consulting Group Inc.**



## References

- Dilorio, Frank & Abolafia, Jeff. “Dictionary Tables and Views: Essential Tools for Serious Applications”  
*SAS Conference Proceedings: SUGI 29*. May 2004.  
<http://www2.sas.com/proceedings/sugi29/237-29.pdf>  
<http://wwwcode-craftersinc.sas.com>
- Lund, Pete. “A Quick and Easy Data Dictionary Macro” *SAS Conference Proceedings: SUGI 27*.  
April 2002.  
<http://www2.sas.com/proceedings/sugi27/p099-27.pdf>
- Ravi, Prasad. “Renaming All Variables in a SAS Data Set Using the Information from PROC SQL’s  
Dictionary Tables”  
*SUGI 28 Seattle SAS Users Group International Proceedings*. March 30-April 2, 2003.  
<http://www2.sas.com/proceedings/sugi28/118-28.pdf>
- Beakley, Steven & McCoy, Suzanne. “Dynamic SAS Programming Techniques, or How NOT to  
Create Job Security”  
*SAS Conference Proceedings SUGI 29*. May 2004.  
<http://www2.sas.com/proceedings/sugi29/078-29.pdf>
- Davis, Michael. “You Could Look it Up: An Introduction to SASHELP Dictionary Views”  
*SAS Conference Proceeding: SUGI 26*. April 2001.  
<http://www2.sas.com/proceedings/sugi26/p017-26.pdf>



## PROC SQL

```
PROC SQL;  
<CREATE TABLE library.newmember AS>  
SELECT <list of fields>  
FROM   library.member  
WHERE  <condition is true>  
ORDER BY <list of fields>  
;  
quit
```



## COLUMNS Table

- Information about the columns/variables in a table/dataset/view
  - libname
  - memname
  - name (in V9, name is now mixed case)
  - type ('char' or 'num')
  - label
  - format
  - length





## TITLES Table

- Information about the TITLES and FOOTNOTES currently set

```
create table DICTIONARY.TITLES
```

```
(
```

```
  type          char(1)          label='Title Location',
```

```
  number        num              label='Title Number',
```

```
  text          char(256)       label='Title Text'
```

```
);
```



## EXTFILES Table

- Information about the External Files (filerefs) currently set

```
create table DICTIONARY.EXTFILES  
(  
  fileref    char(8)    label='Fileref',  
  xpath     char(1024) label='Path Name',  
  xengine   char(8)    label='Engine Name'  
);
```



## LIBNAMES Table

- Information about the librefs currently set

```
create table DICTIONARY.LIBNAMES
```

```
(  
  libname    char(8)    label='Library Name',  
  engine     char(8)    label='Engine Name',  
  path       char(1024) label='Path Name',  
  level      num        label='Library Concatenation Level',  
  fileformat char(8)    label='Default File Format',  
  readonly   char(3)    label='Read-only?',  
  sequential char(3)    label='Sequential?',  
  sysdesc    char(1024) label='System Information Description',  
  sysname    char(1024) label='System Information Name',  
  sysvalue   char(1024) label='System Information Value'  
);
```



## TABLES Table

### ■ Information about the tables/datasets

```
create table DICTIONARY.TABLES
```

libname	char(8)	label='Library Name',
memname	char(32)	label='Member Name',
memtype	char(8)	label='Member Type',
dbms_memtype	char(32)	label='DBMS Member Type',
memlabel	char(256)	label='Dataset Label',
typemem	char(8)	label='Dataset Type',
crdate	num	format=DATETIME informat=DATETIME label='Date Created',
modate	num	format=DATETIME informat=DATETIME label='Date Modified',
nobs	num	label='Number of Physical Observations',



## TABLES Table

obslen	num	label='Observation Length',
nvar	num	label='Number of Variables',
protect	char(3)	label='Type of Password Protection',
compress	char(8)	label='Compression Routine',
encrypt	char(8)	label='Encryption',
npage	num	label='Number of Pages',
filesize	num	label='Size of File',
pcompress	num	label='Percent Compression',
reuse	char(3)	label='Reuse Space',
bufsize	num	label='Bufsize',
delobs	num	label='Number of Deleted Observations',
nlobs	num	label='Number of Logical Observations',
maxvar	num	label='Longest variable name',
maxlabel	num	label='Longest label',





## TABLES Table

maxgen	num	label='Maximum number of generations',
gen	num	label='Generation number',
attr	char(3)	label='Dataset Attributes',
indxtype	char(9)	label='Type of Indexes',
datarep	char(32)	label='Data Representation',
sortname	char(8)	label='Name of Collating Sequence',
sorttype	char(4)	label='Sorting Type',
sortchar	char(8)	label='Charset Sorted By',
reqvector	char(24)	format=\$HEX48 informat=\$HEX48 label='Requirements Vector',
datarepname	char(170)	label='Data Representation Name',
encoding	char(256)	label='Data Encoding',



## TABLES Table

```
audit          char(3)          label='Audit Trail Active?',  
audit_before  char(3)          label='Audit Before Image?',  
audit_admin   char(3)          label='Audit Admin Image?',  
audit_error   char(3)          label='Audit Error Image?',  
audit_data    char(3)          label='Audit Data Image?'  
);
```



## MACROS Table

- Information about the macro variables currently defined

```
create table DICTIONARY.MACROS
(
  scope char(32) label='Macro Scope',
  name char(32) label='Macro Variable Name',
  offset num label='Offset into Macro Variable',
  value char(200) label='Macro Variable Value'
);
```



## REMEMBER TABLE

### ■ Information about remembered text

```
create table DICTIONARY.REMEMBER
(
  libname    char(8)    label='Library Name',
  memname    char(32)   label='Member Name',
  offset     num        label='Offset into Text Remembered',
  rtext      char(200)  label='Text Remembered',
  pw         char(8)    label='Password'
);
```