

What you get and what you lose when you switch to SAS Enterprise Guide®

PhUSE 2009 – 21. October – Paper AD12

Agenda

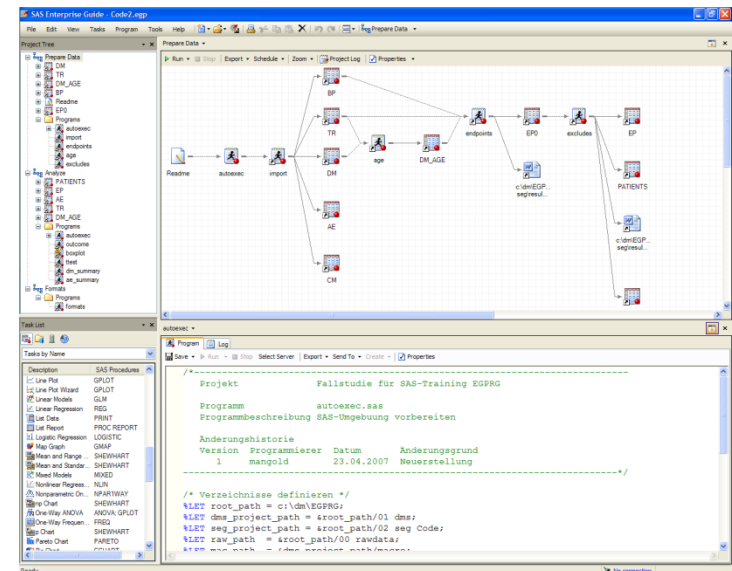
- Introduction
- Differences between Display Manager and Enterprise Guide
- What you lose
- What you get as an experienced SAS programmer
- What you get as a SAS learner
- How the organization can benefit
- Recommendations

Company

- HMS Analytical Software is a specialist for Information Technology in the field of Data Analysis and Business Intelligence Systems
- Profile
 - 30 employees in Heidelberg, Germany
 - SAS Institute Silver Consulting Partner for 13 years
 - Doing data analysis software projects for more than 20 years
- Technologies
 - Analytics and Data Management:
SAS, JMP, R, Microsoft SQL Server
 - Application Development: Microsoft .NET, Java

SAS Enterprise Guide (v 4.2)

- Integrated into Microsoft Office and Windows
- Workflow oriented
- Client-server concept





Results

- Results
 - Print: Fallstudie für Kurs EGPRC
 - Print: Fallstudie für Kurs EGPRC
 - Tabulate: Fallstudie für Kurs EGPRC
 - Tabulate: Fallstudie für Kurs EGPRC
 - Tabulate: Fallstudie für Kurs EGPRC
 - Cross-tabular summary report
 - Table 1
 - Table 2
 - Table 3
 - Table 4
 - Gplot: Fallstudie für Kurs EGPRC
 - Ttest: Fallstudie für Kurs EGPRC

Log - (Untitled)

```
647 +
648 +ODS RTF FILE="%res_path/ttest.rtf";
NOTE: Writing RTF Body file: c:/egprg/fallstudie/01 dms/result/ttest.rtf
649 +TITLE2 'Compare SBP Improvements per Visit';
650 +PROC TTEST DATA=ep;
651 +   WHERE Visit NE 0;
652 +   CLASS Med;
653 +   VAR sbp_rel;
654 +   FORMAT Med Med.;
655 +   BY Visit;
656 +RUN;

NOTE: There were 195 observations read from the data set WORK.EP.
      WHERE Visit not = 0;
NOTE: PROCEDURE TTEST used (Total process time):
      real time           0.03 seconds
      cpu time            0.03 seconds

657 +ODS RTF CLOSE;
658 +
659 +/* Aufräumen */
```

ttest.sas

```
PROC SORT DATA=interim.ep OUT=ep;
  BY Visit;
RUN;

ODS RTF FILE="%res_path/ttest.rtf";
TITLE2 'Compare SBP Improvements per Visit';
PROC TTEST DATA=ep;
  WHERE Visit NE 0;
  CLASS Med;
  VAR sbp_rel;
  FORMAT Med Med.;
  BY Visit;
RUN;
ODS RTF CLOSE;
```

SAS Enterprise Guide - Code2.egp

File Edit View Tasks Program Tools Help

Project Tree

Prepare Data

DM
TR
DM_AGE
BP
Readme
EP0
Programs
autoexec
import
endpoints
age
excludes

Analyze

PATIENTS
EP
AE
TR
DM_AGE
Programs
autoexec
outcome
boxplot
ttest
dm_summary
ae_summary

Formats

Programs
formats

Prepare Data

Run Stop Export Schedule Zoom Project Log Properties

Task List

Tasks by Name

Description	SAS Procedures
Line Plot	GPLOT
Line Plot Wizard	GPLOT
Linear Models	GLM
Linear Regression	REG
List Data	PRINT
List Report	PROC REPORT
Logistic Regression	LOGISTIC
Map Graph	GMAP
Mean and Range ...	SHEWHART
Mean and Standar...	SHEWHART
Mixed Models	MIXED
Nonlinear Regress...	NLIN
Nonparametric On...	NPARIWAY
np Chart	SHEWHART
One-Way ANOVA	ANOVA; GPLOT
One-Way Frequen...	FREQ
p Chart	SHEWHART
Pareto Chart	PARETO
Pa Chart	CCURT

autoexec

Program Log
Save Run Stop Select Server Export Send To Create Properties

```

/*-----
Projekt                Fallstudie für SAS-Training EGPRG

Programm              autoexec.sas
Programmbeschreibung  SAS-Umgebung vorbereiten

Änderungshistorie
Version  Programmierer  Datum      Änderungsgrund
  1      mangold        23.04.2007  Neuerstellung
-----*/

/* Verzeichnisse definieren */
%LET root_path = c:\dm\EGPRG;
%LET dms_project_path = &root_path/01 dms;
%LET seg_project_path = &root_path/02 seg Code;
%LET raw_path = &root_path/00 rawdata;
%LET mac_path = &dms_project_path/macro;

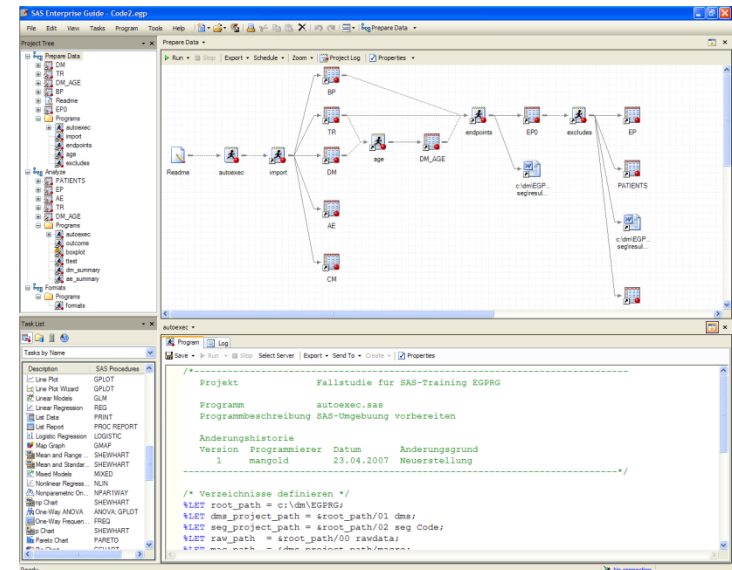
```

Ready

No connection

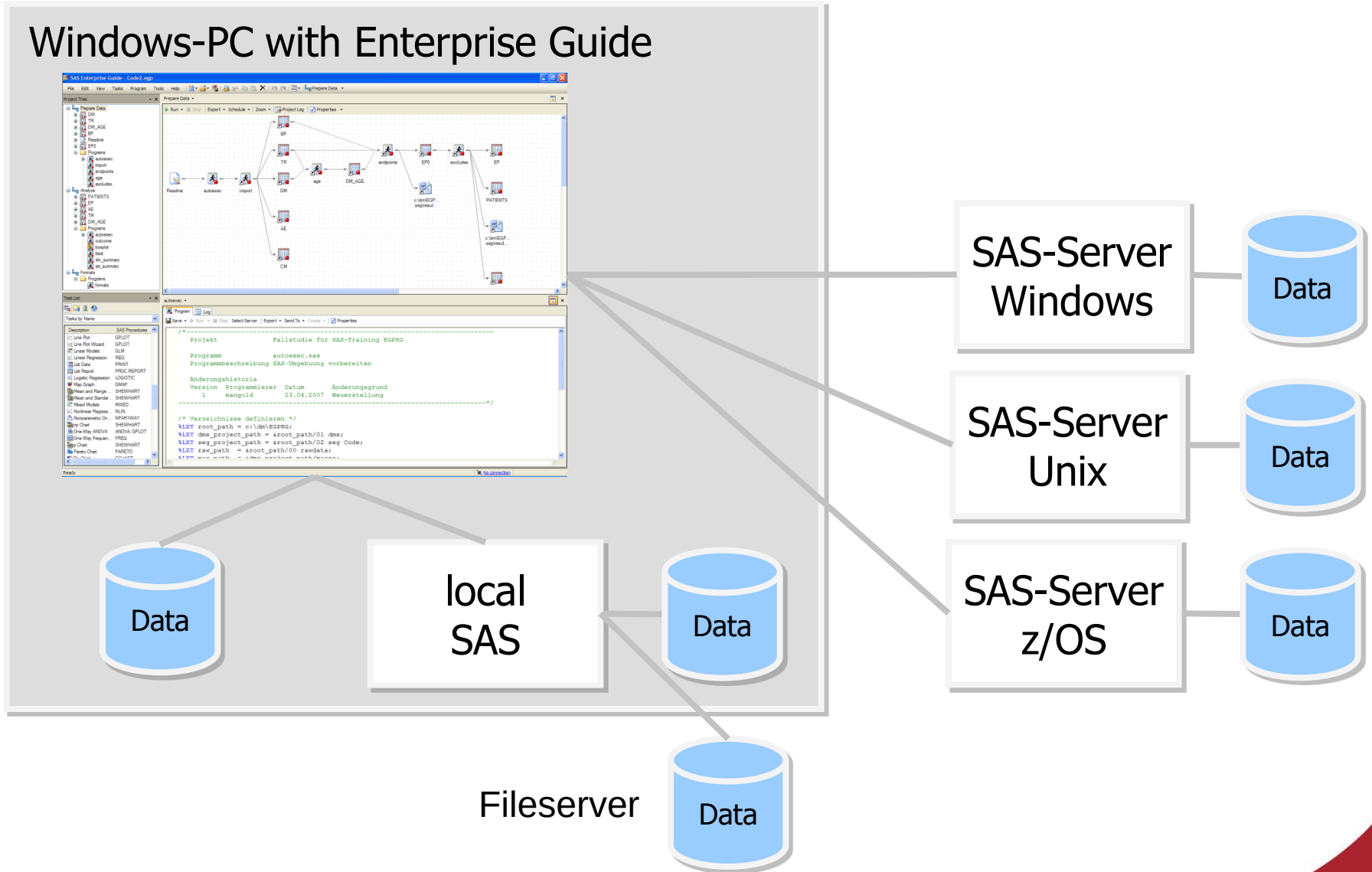
SAS Enterprise Guide (v 4.2)

- Integrated into Microsoft Office and Windows
- Workflow oriented
- Client-server concept



Enterprise Guide Software Architecture

Windows-PC with Enterprise Guide



What You lose – Quick program-submit-debug-cycles

- Startup of SAS Enterprise Guide is slower
- Server process must be started once in a session
- There is some delay for transmission of programs and results to server, even to local SAS server
- Full keyboard control is missing in SAS Enterprise Guide

Lost features and Workarounds

Feature	Application	Workaround
Program Editor	Editor with line numbers and line commands	Use enhanced editor
SAS/FSP	Editing of SAS data sets with extensive data validation features	None in SEG (grid editing is not a real work around) – import data
SAS/AF	Object oriented application development	Use prompts or custom tasks
Macro Window	%WINDOW-statement: macro variable prompts during program execution	Use Prompt Manager (“View – Prompt Manager”)
Browse Catalog	Browse through catalog entries	Download custom task Catalog Explorer
Graphics Viewer, Editor	View and edit graphs in SAS	Use standard graphics files and your favourite graph editor
DDE	Dynamic data exchange from and to Microsoft Excel	Use special ODS functions and Macros
X-Command	Execute OS-level commands like DIR	Use SAS file-IO-functions
DM-Commands	Control SAS Display Manager GUI	Use automation where possible
OS specific programming	Switch to SEG might mean switch to a different Operating System on Server	none, change programs

What you get as an experienced SAS programmer

- Reuse existing programs
- Organize programs and results
- Quickly perform complex joins
- Quickly inspect your data
- Benefit from code generators
- Export complete project as a single program

Reuse existing SAS programs

The screenshot displays the SAS Enterprise Guide interface. On the left, a workflow diagram shows a process flow starting from 'study01' and branching into several tasks: DM, TR, BP, AE, CM, and DM_AGE. The main window on the right shows the SAS code editor for the selected task. The code defines paths for root, project, raw data, data, macro, result, program, and format files. It also sets search paths for macros and formats, defines a permanent SAS library, and includes two external SAS programs: 'import.sas' and 'age.sas'.

```
/* Verzeichnisse definieren */
%LET root_path      = c:\dm\EGPRG;
%LET project_path   = &root_path/01 dms;
%LET raw_path       = &root_path/00 rawdata;
%LET dat_path       = &project_path/data;
%LET mac_path       = &project_path/macro;
%LET res_path       = &project_path/result;
%LET pgm_path       = &project_path/pgm;
%LET fmt_path       = &project_path/formats;

/* Suchpfade für Makros und Formate setzen */
OPTIONS
    MPRINT MAUTOSOURCE MCOMPILENOTE=ALL SASAUTOS=(SASAUTOS "&mac
;
LIBNAME library "&fmt_path";

/* permanente SAS-Bibliothek */
LIBNAME interim "&dat_path";

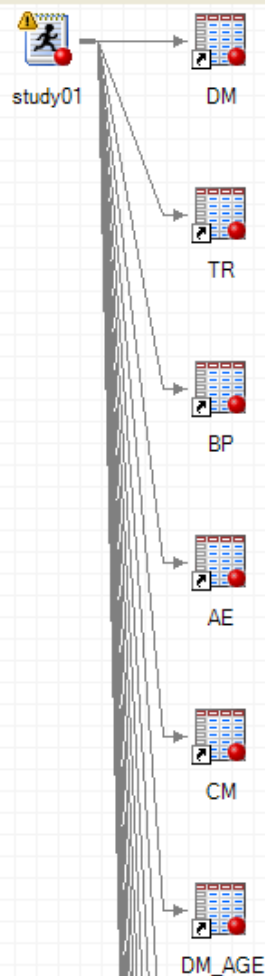
/* Einstellungen für Reports */
TITLE H=16pt "Fallstudie für Kurs EGPRG";
ODS LISTING CLOSE;

/* Programme aufrufen */
OPTIONS SOURCE2;
%include "&pgm_path/import.sas";
%include "&pgm_path/age.sas";
```

Run Stop Export Schedule Zoom

Program Log Output Data (10) Results - RTF (7)

Export Send To Create Project Log Properties



```
90      +/* Treatments */
91      +PROC IMPORT DATAFILE="&raw_path/treat.xls" OUT=tr dbms=excel REPLAC
92      +   SHEET='treatments$';
93      +   GETNAMES=YES;
94      +RUN;
```

NOTE: PROCEDURE IMPORT used (Total process time):

real time 0.15 seconds

cpu time 0.09 seconds

NOTE: .TR was successfully created.

```
95      +
96      +DATA interim.tr;
97      +   ATTRIB
98      +       PatId      LENGTH=8 LABEL="Patient Id"
99      +       Med        LENGTH=8 LABEL="Medication"
100     +       DoseDate   LENGTH=8 LABEL="Day of Dosing" FORMAT=ddmmyypp10.
101     +       ;
102     +   SET tr;
103     +RUN;
```

NOTE: There were 40 observations read from the data set WORK.TR.

NOTE: The data set INTERIM.TR has 40 observations and 3 variables.

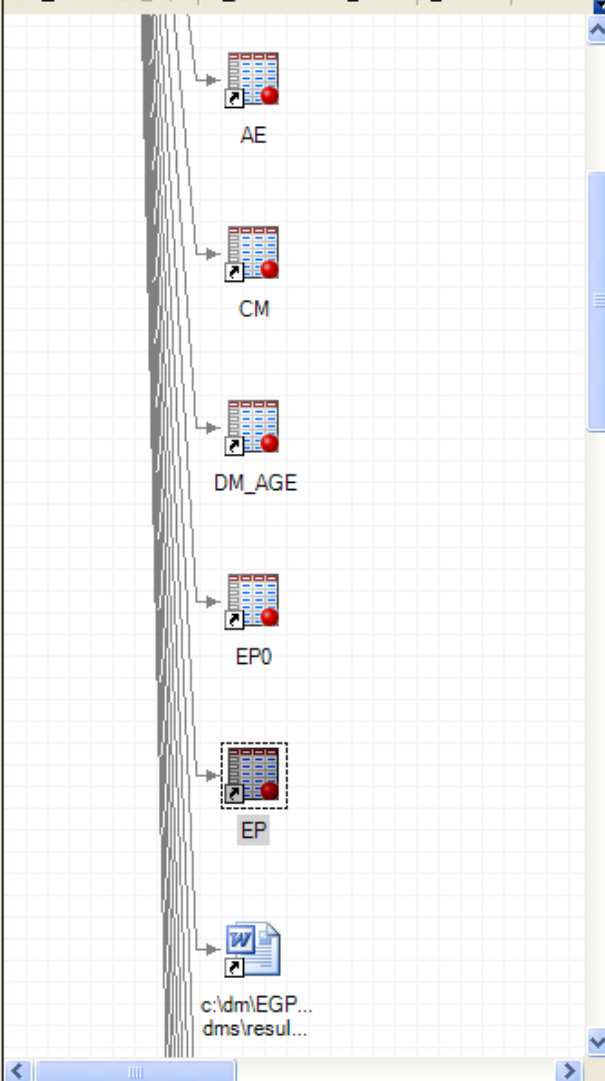
NOTE: DATA statement used (Total process time):

real time 0.00 seconds

cpu time 0.00 seconds

```
104     +
105     +/* Blood Pressure Measurements */
106     +DATA interim.bp;
```

Run Stop Export Schedule Zoom



Program Log Output Data (10) Results - RTF (7)

EP

Filter and Sort Query Builder Data Describe Graph Analyze Export Send To

	PatId	Visit	Med	SBP	DBP	sbp_abs
1	101	0	0	156	118	0
2	101	1	0	155	112	-1
3	101	2	0	148	99	-8
4	101	3	0	147	94	-9
5	101	4	0	148	95	-8
6	101	5	0	149	96	-7
7	103	0	0	164	121	0
8	103	1	0	157	108	-7
9	103	2	0	149	98	-15
10	103	3	0	146	96	-18
11	103	4	0	147	97	-17
12	103	5	0	150	99	-14
13	104	0	0	161	121	0
14	104	1	0	153	114	-8
15	104	2	0	149	104	-12
16	104	3	0	147	96	-14
17	104	4	0	143	101	-18
18	104	5	0	145	100	-16
19	105	0	1	156	120	0
20	105	1	1	149	112	-7
21	105	2	1	144	96	-12
22	105	3	1	140	88	-16
23	105	4	1	142	96	-14
24	105	5	1	142	93	-14
25	106	0	1	153	117	0
26	106	1	1	150	109	-3
27	106	2	1	144	94	-9
28	106	3	1	142	91	-11
29	106	4	1	143	92	-10
30	106	5	1	141	91	-12

Run Stop Export Schedule Zoom

Program Log Output Data (10) Results - RTF (7)

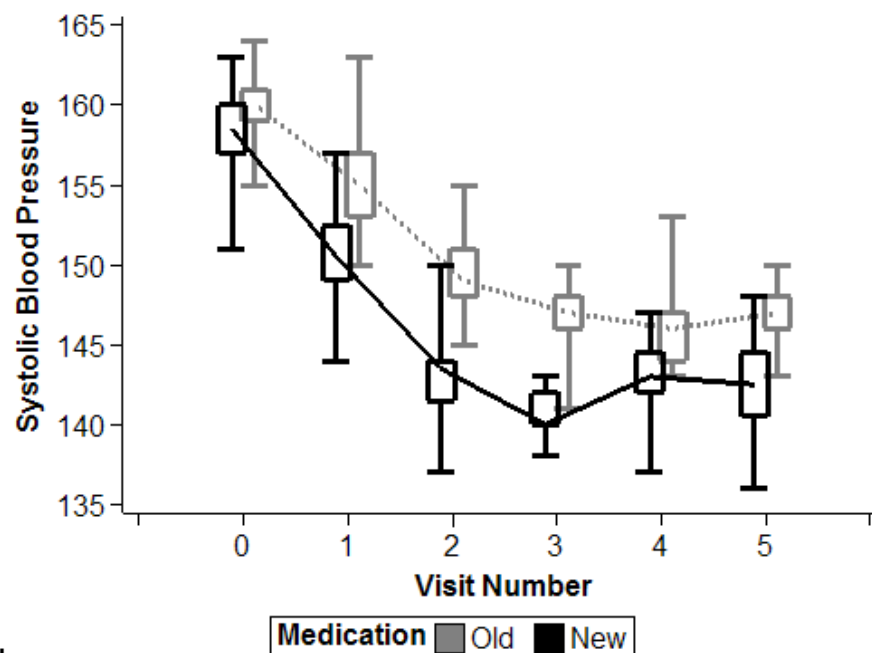
c:\dm\EGPRG\01 dms\result\boxplot.rtf

Refresh Export Send To Publish Properties

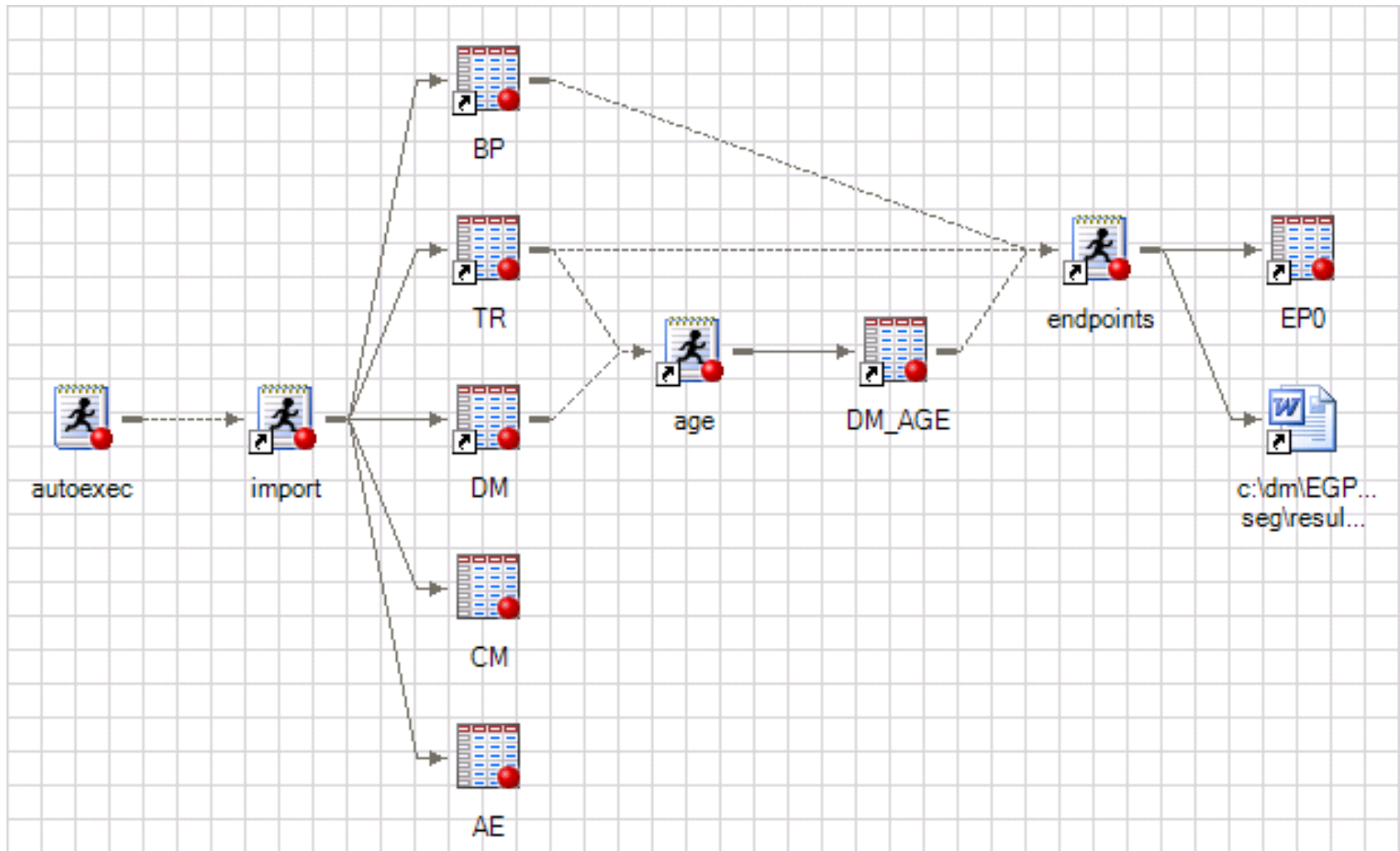
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

08:53 Mittwoch, Oktober 21, 2009

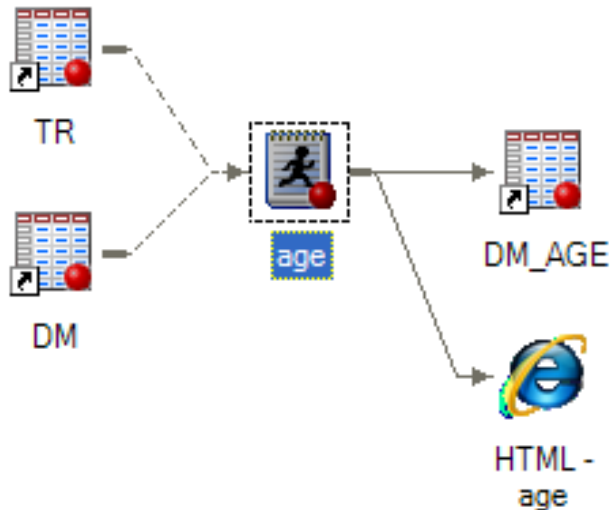
Fallstudie für Kurs EGPRG *Systemischer Blutdruck nach Visite*



Organize programs and results



Organize programs and results



```

□ PROC SORT DATA=interim.tr OUT=tr;
  BY PatId;
RUN;

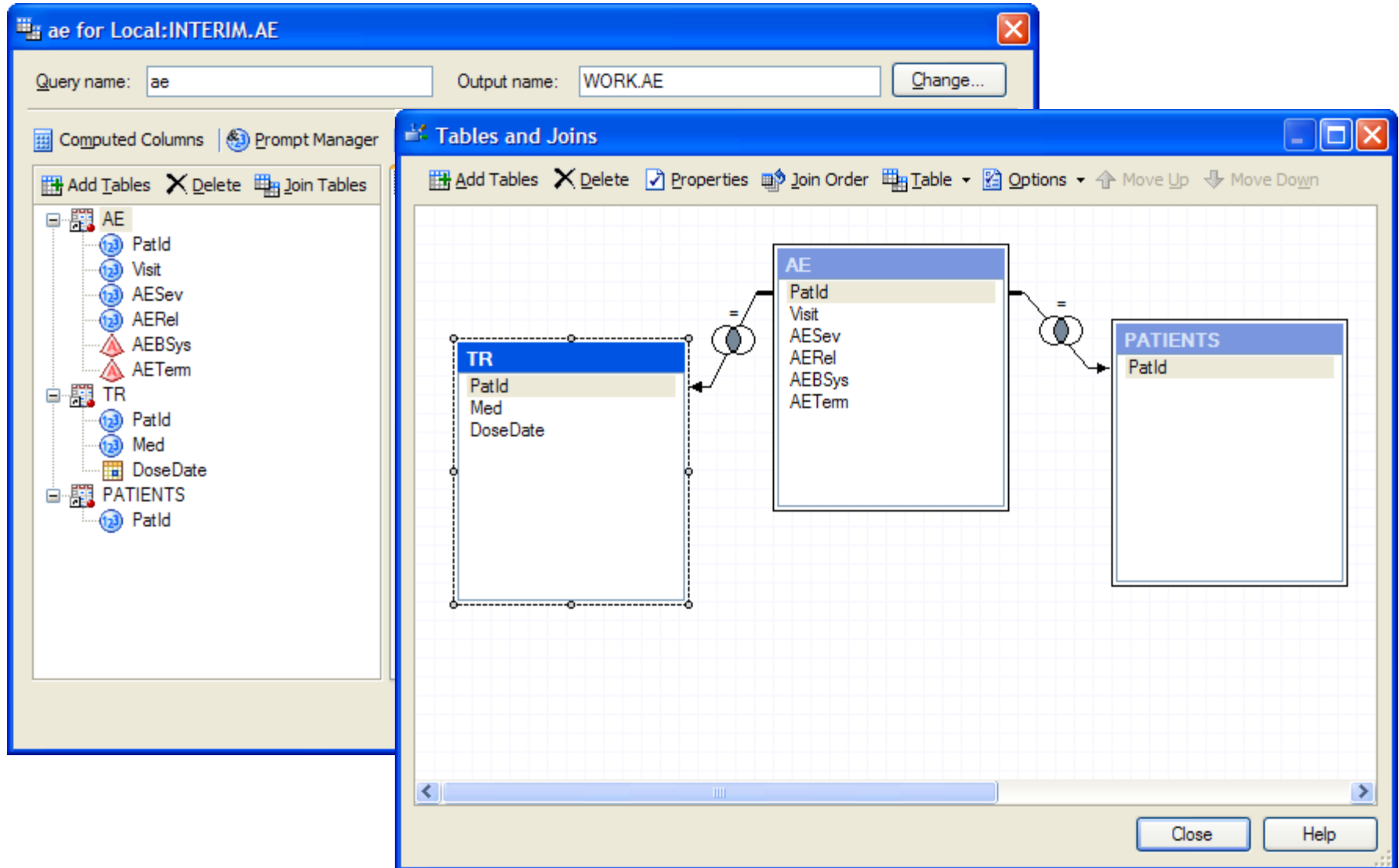
□ PROC SORT DATA=interim.dm OUT=dm;
  BY PatId;
RUN;

□ DATA interim.dm_age (DROP=DoseDate);
  MERGE
    dm (IN=InDM)
    tr (IN=InTR)
  ;
  BY PatId;
  ATTRIB
    age LENGTH=8 LABEL='Age on DoseDate'
  ;
  age = year (DoseDate) - YearOfBirth;
RUN;

□ PROC PRINT DATA=interim.dm_age;
RUN;

/* tidy up */
□ PROC DATASETS LIB=work NOLIST;
  DELETE dm tr;
QUIT;
  
```

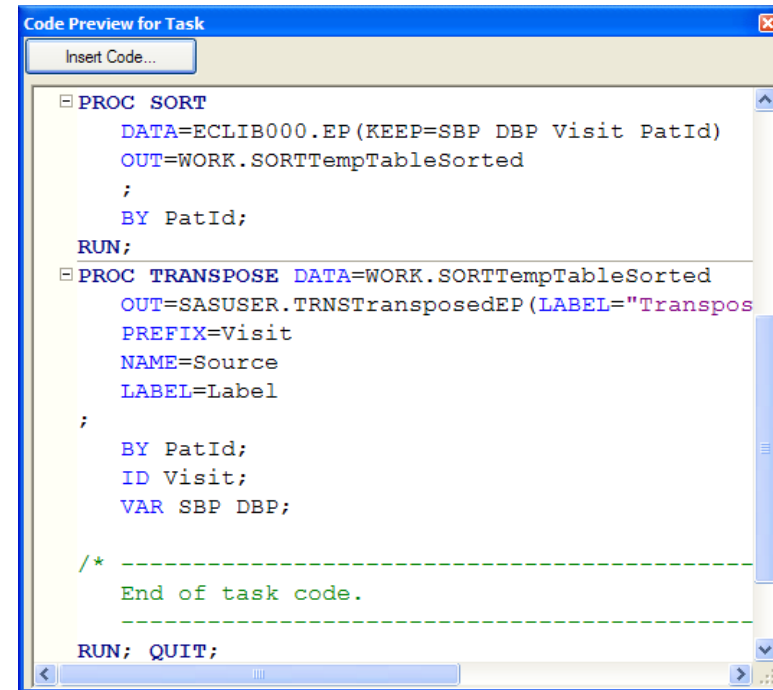
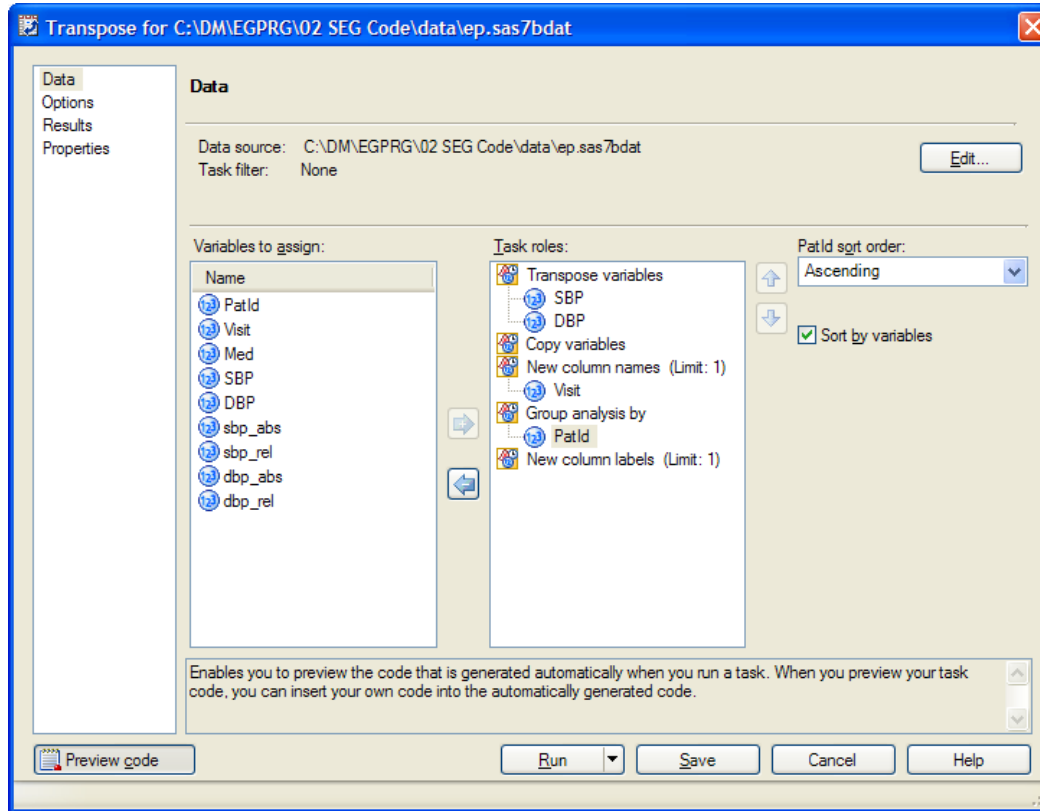
Quickly perform complex joins



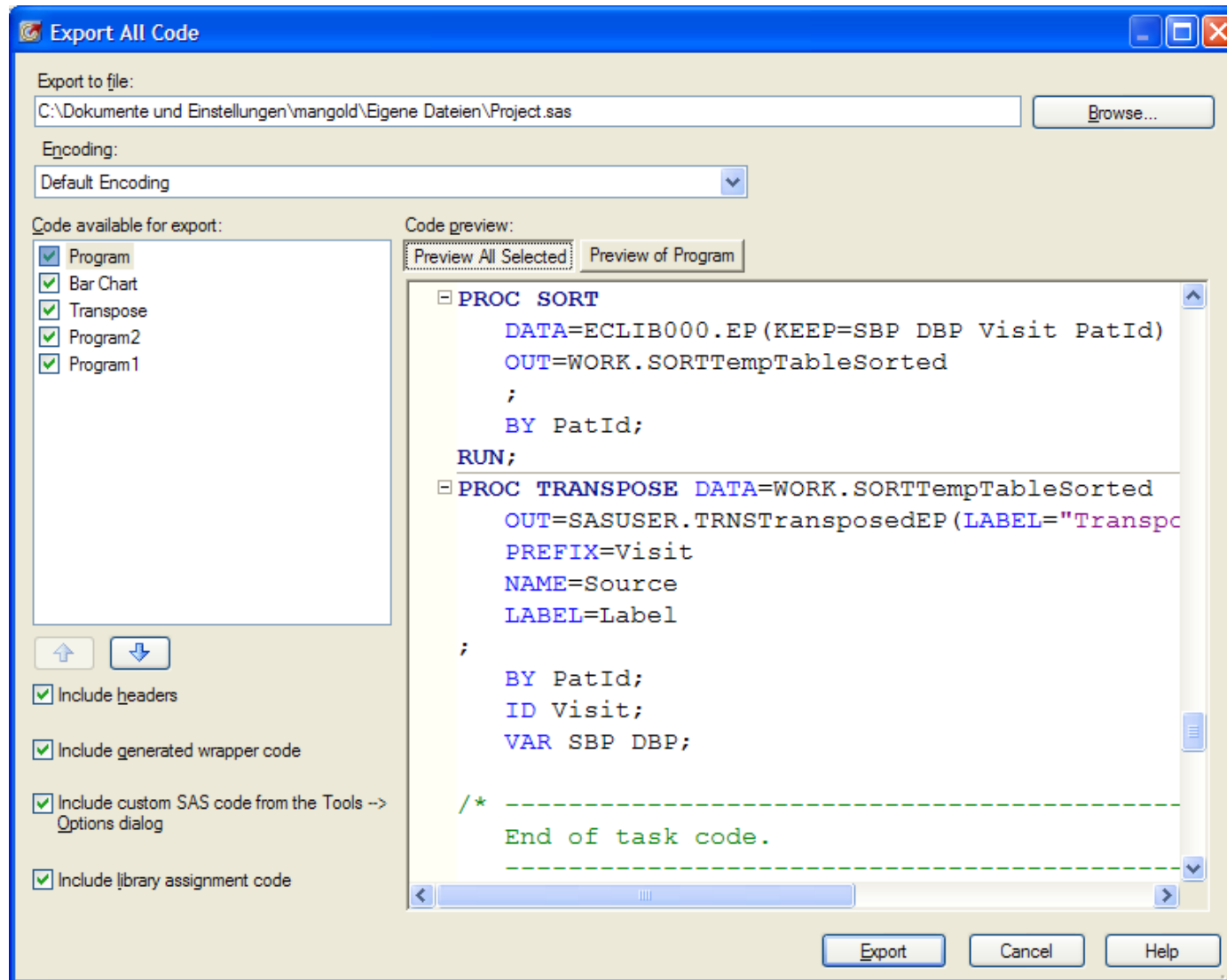
Quickly inspect your data

Filter and Sort		Query Builder		Data	Describe	Graph	Analyze	Export	Send To	
PatId	Visit									
1	101	0			dbp	sbp_abs	sbp_rel	dbp_abs	dbp_rel	
2	101	1			118	0	0	0	0	
3	101	2			112	-1	-0.0064103	-6	-0.0508475	
4	101	3			99	-8	-0.0512821	-19	-0.1610169	
5	101	4			94	-9	-0.0576923	-24	-0.2033898	
6	101	5			95	-8	-0.0512821	-23	-0.1949153	
7	101	0			96	-7	-0.0448718	-22	-0.1864407	
8	103	1			121	0	0	0	0	
9	103	2			108	-7	-0.0426829	-13	-0.107438	
10	103	3			98	-15	-0.0914634	-23	-0.1900826	
11	103	4			96	-18	-0.1097561	-25	-0.2066116	
12	103	5			97	-17	-0.1036585	-24	-0.1983471	
13	104	0			99	-14	-0.0853659	-22	-0.1818182	
14	104	1	0	153	121	0	0	0	0	
15	104	2	0	149	114	-8	-0.0496894	-7	-0.0578512	
16	104	3	0	147	104	-12	-0.0745342	-17	-0.1404959	
17	104	4	0	143	96	-14	-0.0869565	-25	-0.2066116	
18	104	5	0	145	101	-18	-0.1118012	-20	-0.1652893	
19	105	0	1	156	100	-16	-0.0993789	-21	-0.1735537	
20	105	1	1	149	112	-7	-0.0448718	-8	-0.0666667	
21	105	2	1	144	96	-12	-0.0769231	-24	-0.2	
22	105	3	1	140	88	-16	-0.1025641	-32	-0.2666667	
23	105	4	1	142	96	-14	-0.0897436	-24	-0.2	
24	105	5	1	142	93	-14	-0.0897436	-27	-0.225	
25	106	0	1	153	117	0	0	0	0	
26	106	1	1	150	109	-3	-0.0196078	-8	-0.0683761	
27	106	2	1	144	94	-9	-0.0588235	-23	-0.1965812	

Benefit from code generators



Export complete project as a single program

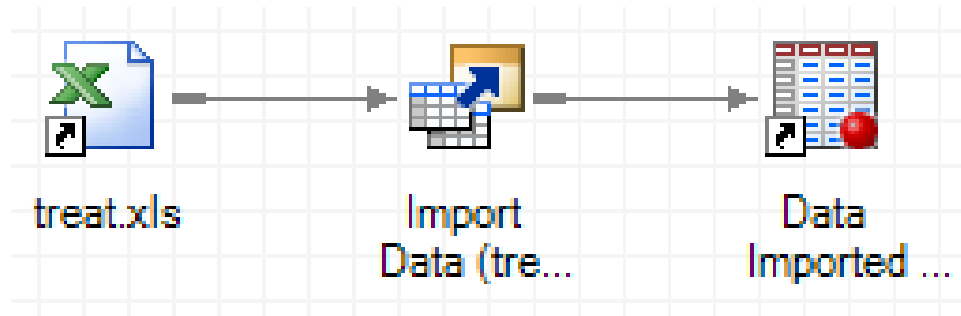


What You get as a SAS learner

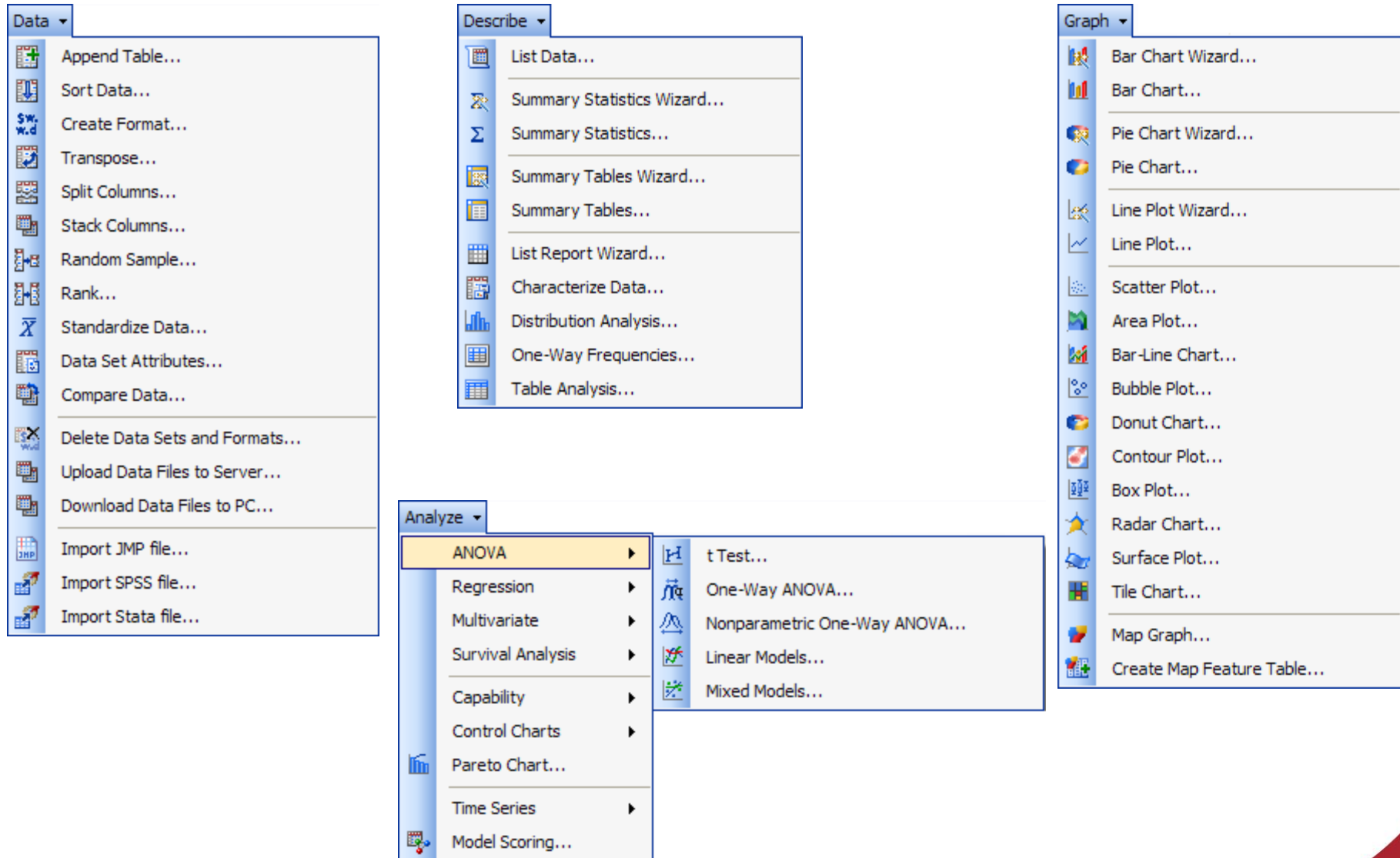
- Easily import and export data
- Often no coding necessary
- Learn from the code generator
- No need to deal with ODS programming
- Customizable user interface

Easily import and export data

- Use wizard to import Excel, Access, text data
- Column attribute can be changed when importing
- Significantly enhanced in SEG v4.2
 - Handling is much easier
 - Generate PROC IMPORT and data step
 - Better handling for date and datetime values



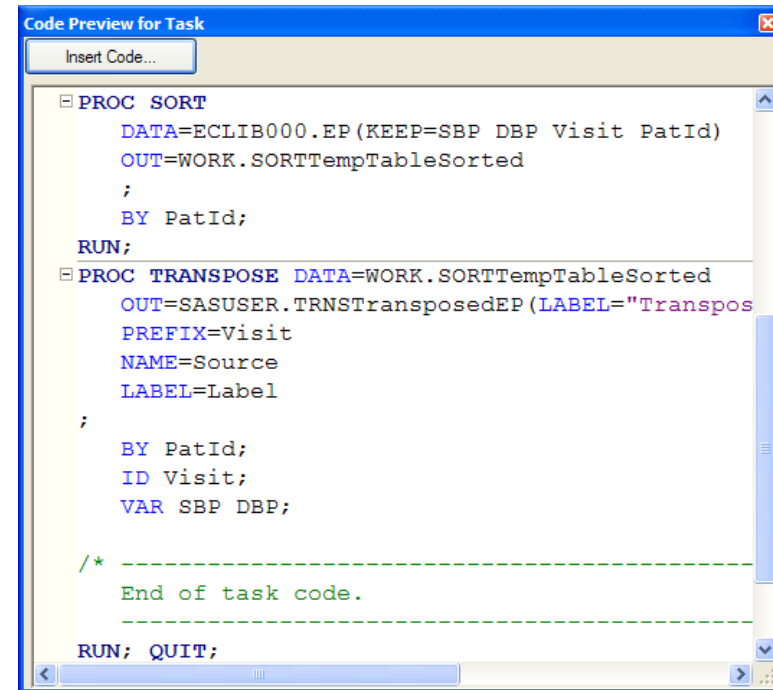
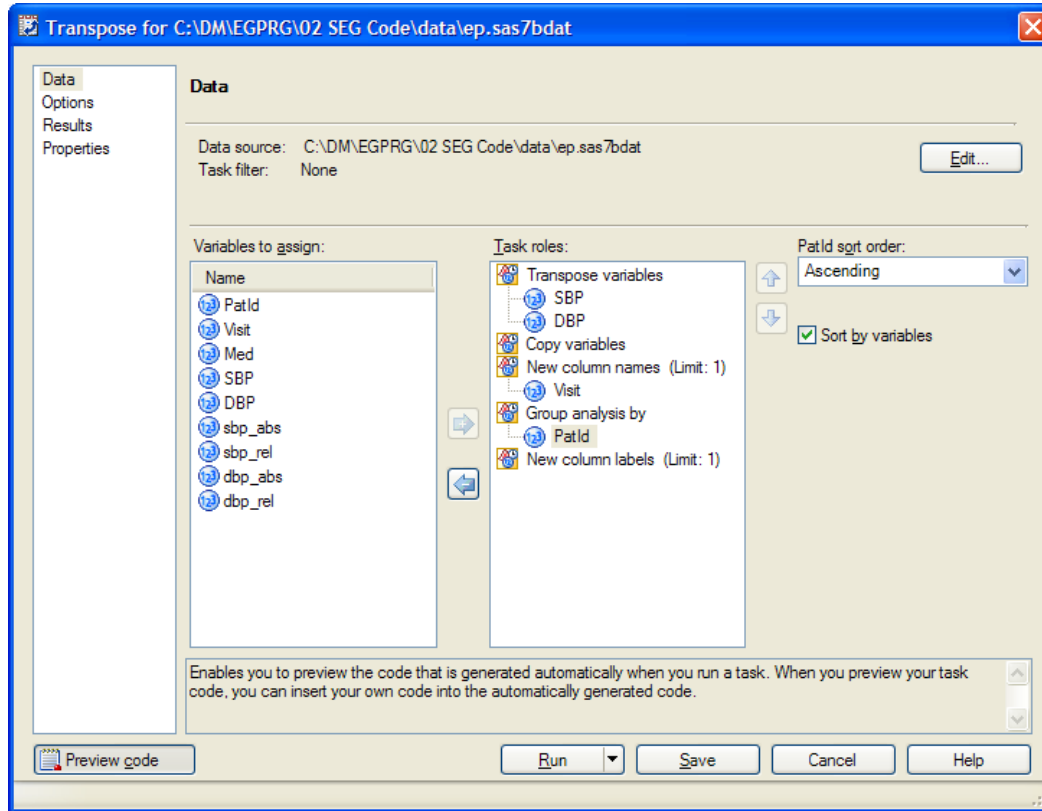
Often no coding necessary



The image displays the main menu structure of the HMS Analytical Software, organized into four primary categories: Data, Describe, Graph, and Analyze.

- Data Menu:**
 - Append Table...
 - Sort Data...
 - Create Format...
 - Transpose...
 - Split Columns...
 - Stack Columns...
 - Random Sample...
 - Rank...
 - Standardize Data...
 - Data Set Attributes...
 - Compare Data...
 - Delete Data Sets and Formats...
 - Upload Data Files to Server...
 - Download Data Files to PC...
 - Import JMP file...
 - Import SPSS file...
 - Import Stata file...
- Describe Menu:**
 - List Data...
 - Summary Statistics Wizard...
 - Summary Statistics...
 - Summary Tables Wizard...
 - Summary Tables...
 - List Report Wizard...
 - Characterize Data...
 - Distribution Analysis...
 - One-Way Frequencies...
 - Table Analysis...
- Graph Menu:**
 - Bar Chart Wizard...
 - Bar Chart...
 - Pie Chart Wizard...
 - Pie Chart...
 - Line Plot Wizard...
 - Line Plot...
 - Scatter Plot...
 - Area Plot...
 - Bar-Line Chart...
 - Bubble Plot...
 - Donut Chart...
 - Contour Plot...
 - Box Plot...
 - Radar Chart...
 - Surface Plot...
 - Tile Chart...
 - Map Graph...
 - Create Map Feature Table...
- Analyze Menu:**
 - ANOVA
 - t Test...
 - One-Way ANOVA...
 - Nonparametric One-Way ANOVA...
 - Linear Models...
 - Mixed Models...
 - Regression
 - Multivariate
 - Survival Analysis
 - Capability
 - Control Charts
 - Pareto Chart...
 - Time Series
 - Model Scoring...

Learn from the code generator



No need to deal with ODS programming

The screenshot shows the 'Properties for Summary Tables' dialog box with the 'Results' tab selected. The 'Customize result formats, styles, and behavior' option is chosen. The 'RTF' checkbox is checked, and the 'Graph Format' is set to 'ActiveX'. The 'Automatically open data or results when generated' checkbox is also checked. A 'Reset Options' button is at the bottom.

Below the dialog box, a workflow diagram illustrates the process:

```
graph LR; A[Summary Tables] --> B[RTF - Summary T...]; B --> C[Export File [RT...]]; C --> D[Summary Tables.rtf];
```

The diagram shows a sequence of four icons connected by arrows: a table icon, a Word document icon, an export icon, and a Word document icon with a refresh symbol.

Time now for your questions...

