ODS Graphics in SAS

Better Statistical Graphics

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October 27th 2010
UI-SASUG Presentation

Outline

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- What is ODS Graphs?
- Graphs from SAS/ODS
- Live Session

Background

SAS was always critised for having inferior graphics compared to other statistical software such as SigmaPlot, R.

SAS/GRAPH

SAS/GRAPH procedures give some nice results, but they are harder to learn and use.

Output Delivery System

SAS introduced Output Delivery System (ODS) with SAS v7.

ODS was geared toward plain output.

ODS provides different destinations for the output that are produced by SAS procedures. These formats are

- Listing
- Rich Text Format (rtf)
- HTML
- PDF
- LaTeX(also creates LaTeXcodes along with graphs)

ODS Graphs

Beginning v9.1 SAS introduced ODS Statistical Graphics (aka ODS Graphs) on more than two dozen SAS/STAT and SAS/ETS procedures.

They became regular production with v9.2.

Graph Template Language

ODS Graphs creates *"most used*"* plots along with tables in the output automatically. No need to learn extra coding.

*if a graph is not available via ODS, then you can still create what you want by learning *Graph Template Language, GTL*. ODS-GTL is out of scope of this presentation.

ODS Graphs Editor

ODS Graphs Editor allows you to edit graphs inside SAS. You can change titles, labels, draw lines, etc. Necessary code for creating editable graphs is :

```
ods listing sge = on ;
```

How to Start

Caution: ODS Graphs are supported for *Listing* destination beginning v9.2.

You need **ods graphics on** statement before procedure codes in order to use ODS Graphs.

How to Start

```
ods html body = 'c:\my_SAS_outputs\myProc.htm' ;
ods graphics on ;

proc logistic data = my_data ;
...
run ;

ods graphics off ;
ods html close ;
```

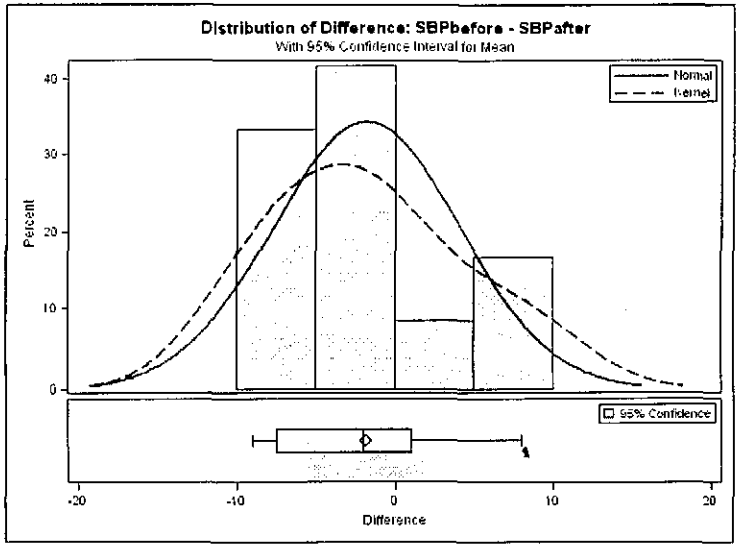
Different Styles

- DEFAULT
- STATISTICAL - better for color printing
- JOURNAL - better for articles
- ANALYSIS - more colorful than default style

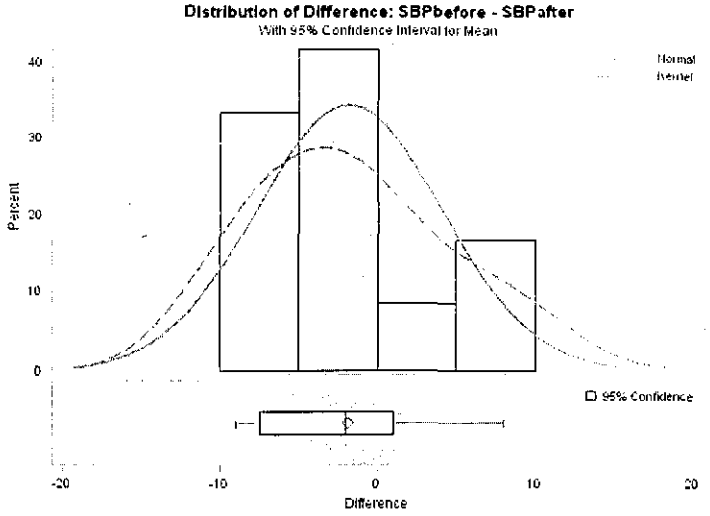
PROC TTEST

```
/*************** PROC T-TEST **************/
/*************** HTML Destination *********/
data pressure;
        input SBPbefore SBPafter @@;
        datalines;
   120 128   124 131   130 131   118 127
   140 132   128 125   140 141   135 137
   126 118   130 132   126 129   127 135
   ;
   run;
ods html ;
   ods graphics on;
   proc ttest data = pressure plots = all ;
      paired SBPbefore*SBPafter;
   run;
   ods graphics off;
ods html close ;
```

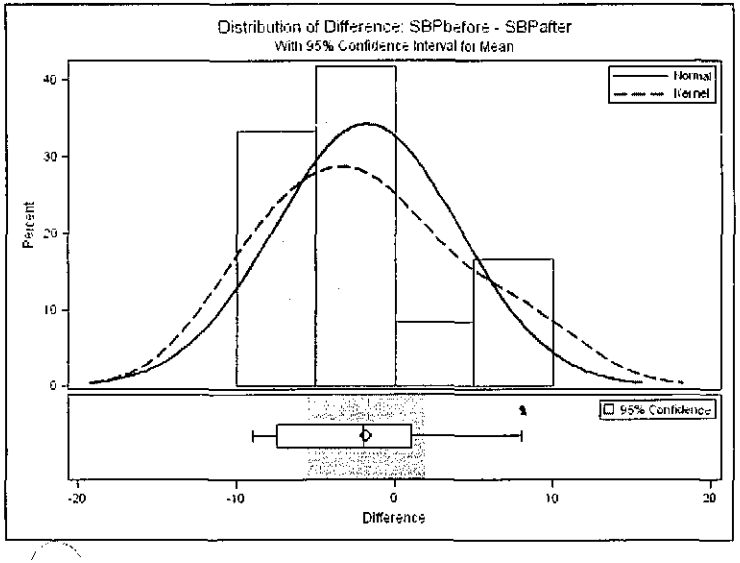
PROC TTEST - default style



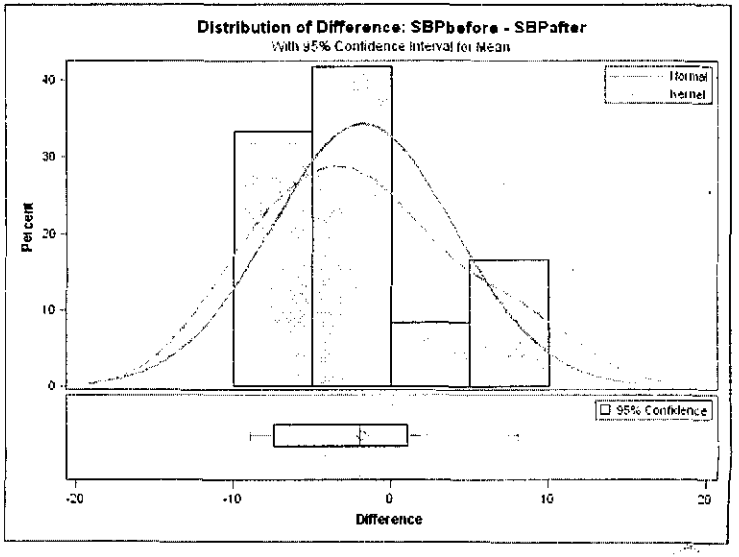
PROC TTEST - statistical style



PROC TTEST - journal style



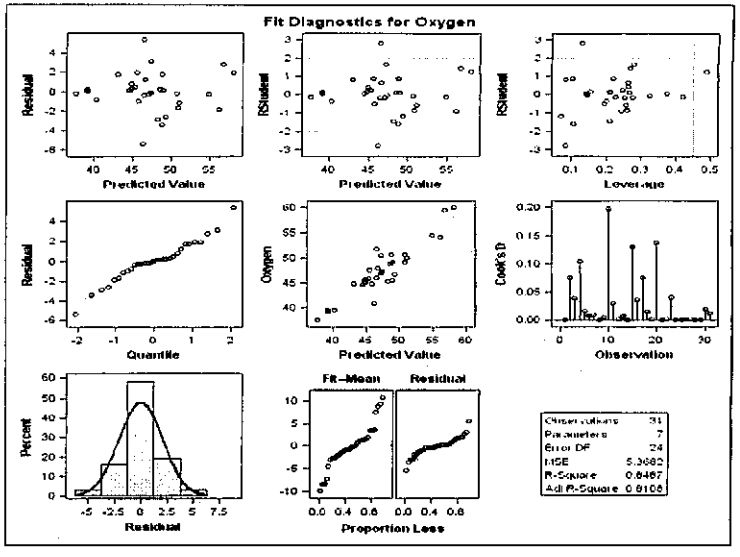
PROC TTEST - analysis style



PROC REG

```
/*************** PROC REG *****************/
/*************** HTML Destination *********/
   data fitness;
      input Age Weight Oxygen
      RunTime RestPulse RunPulse MaxPulse @@;
   datalines;
   44 89.47 44.609 11.37 62 178 182
more data lines ...
   52 82.78 47.467 10.50 53 170 172
   ;
ods html ;
   ods graphics on;
   proc reg data=fitness plots = all ;
      model Oxygen=Age Weight RunTime
      RunPulse RestPulse MaxPulse ;
run;
   ods graphics off;
ods html close ;
```

PROC REG



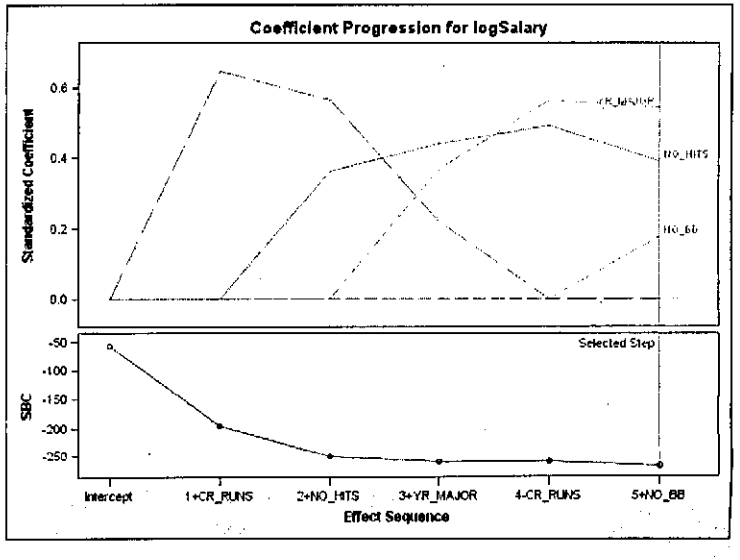
PROC GLMSELECT

```
/*************** PROC GLMSELECT ***********/
/*************** HTML Destination *********/
ods html ;
   ods graphics on;

   proc glmselect data=baseb.baseball2 plots=all;
     class league division;
     model logSalary = NO_AtBat NO_Hits NO_Home
     NO_Runs NO_RBI NO_BB
yr_Major cr_AtBat cr_Hits cr_Home cr_Runs cr_Rbi
cr_BB league division NO_Outs NO_Assts NO_Error
/ details=all stats=all;
   run;

   ods graphics off;
ods html close ;
```

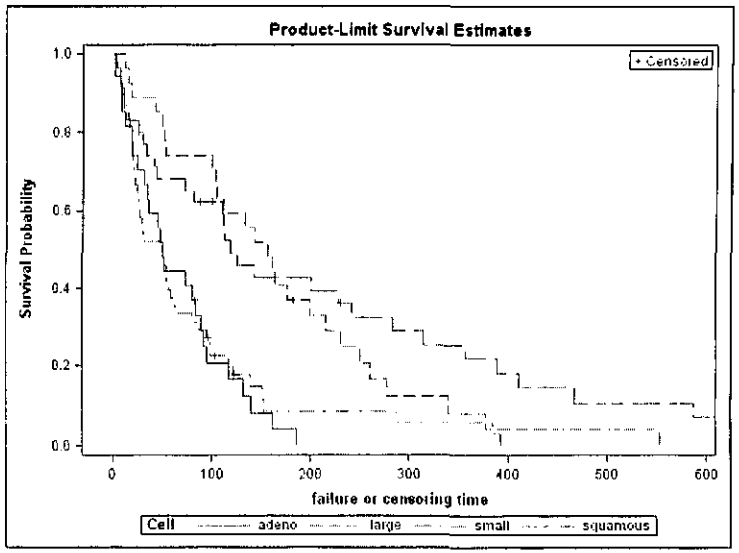
PROC GLMSELECT



PROC LIFETEST

```
/*************** PROC LIFETEST ***************/
/*************** HTML Destination *********/
   data VALung;
   more datalines ...
   ;
run ;
ods html ;
   ods graphics on;
   proc lifetest data=VALung plots=(s,ls,lls)
    outtest=Test maxtime=600;
      time SurvTime*Censor(1);
      id Therapy;
      strata Cell;
      test Age Prior DiagTime Kps Treatment;
   run;
   ods graphics off;
ods html close ;
```


PROC LIFETEST



Live Session

Let us run some simple models.

Thanks

Thank you for coming!