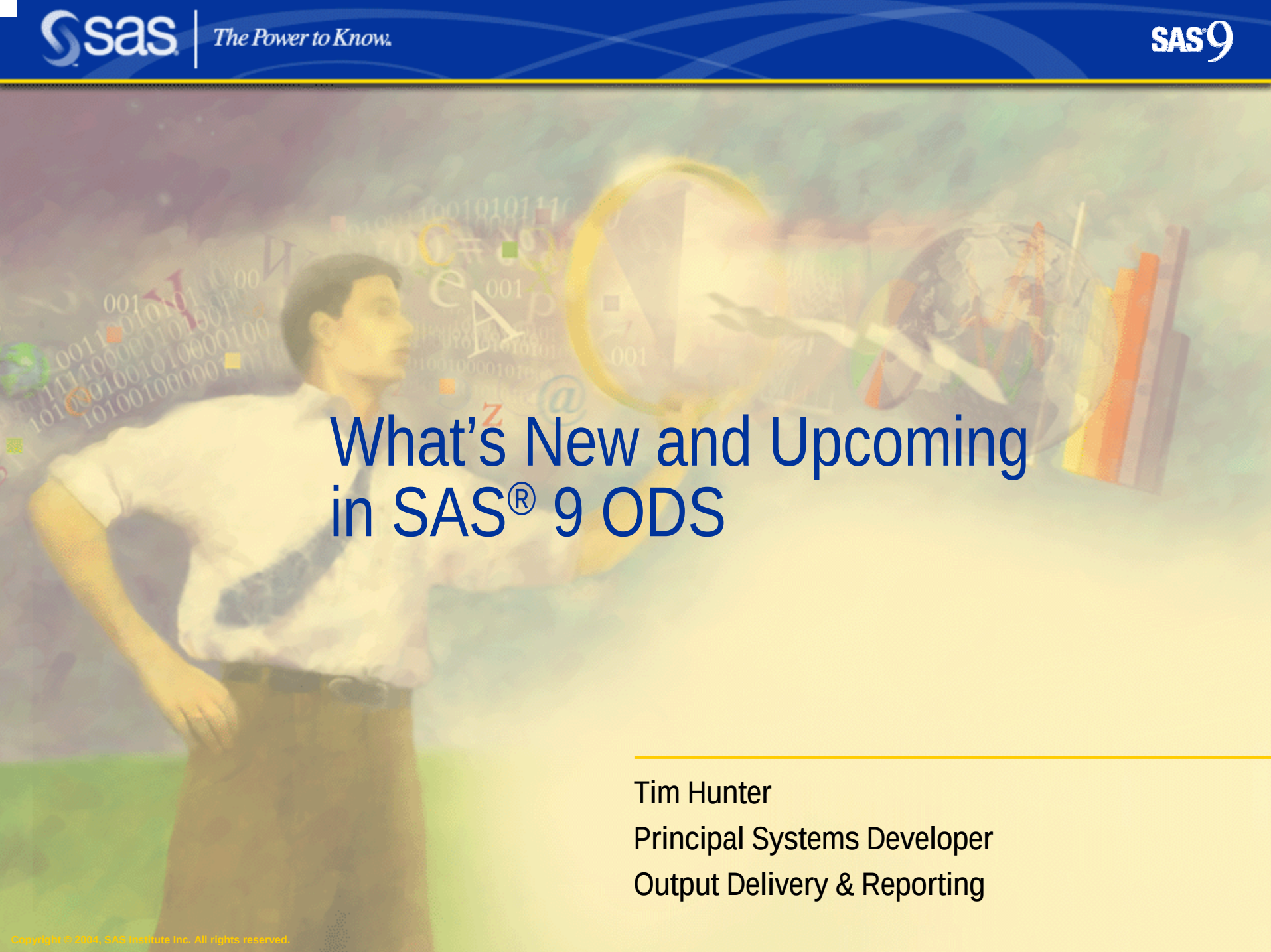




What's New and Upcoming in SAS[®] 9 ODS

Tim Hunter

Principal Systems Developer
Output Delivery & Reporting

Agenda

- Why ODS?
- What's new?
- What's upcoming?
- Q&A



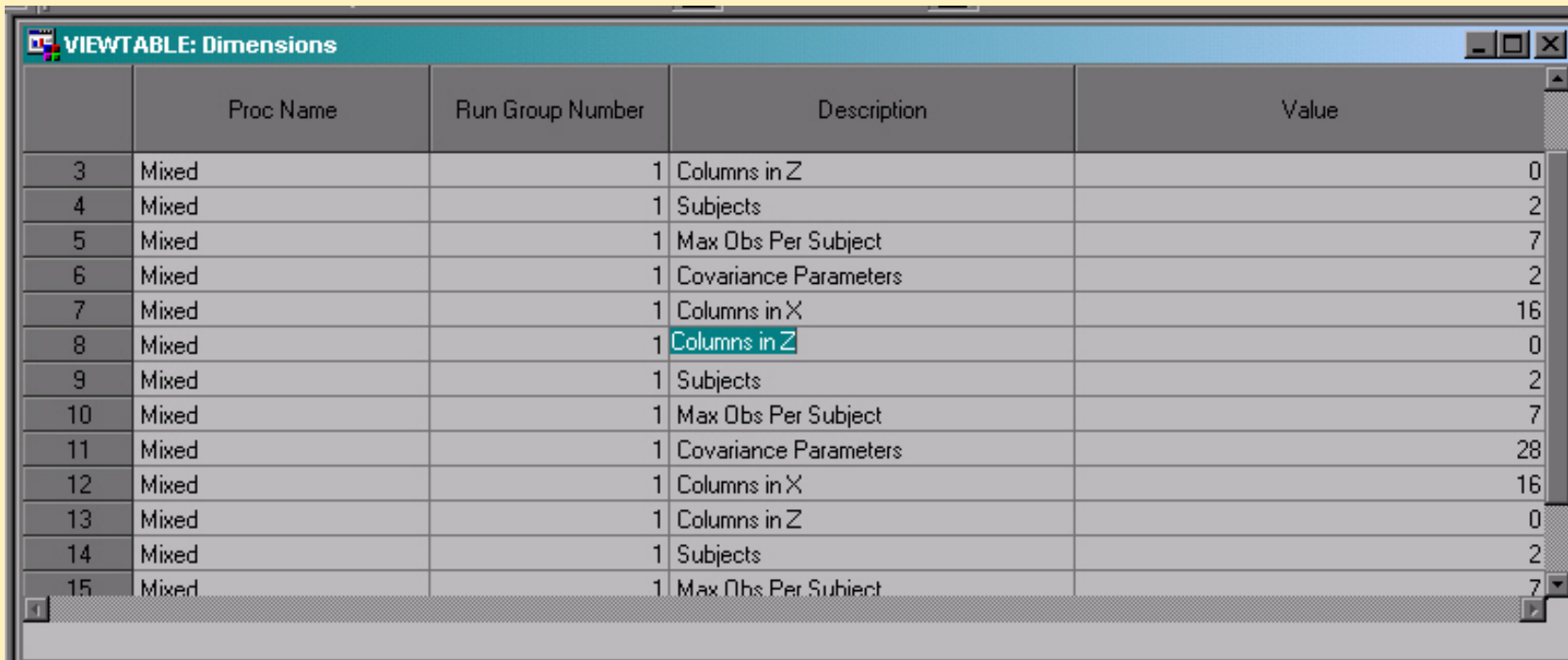
Why ODS?

SAS Institute
Statistical Analysis System

NAME	ORIGIN	LENGTH	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IBMBPOPT*	2EC0	1C						
PLIXDPT *	2EE0	2A						
SASPLD2	2F10	168						
SASPLD1	3078	4A0						
SASLNKO *	3518	230						
			SASPLF	3080	SASPLD	30F0	SASPLFN	3124
							SASPLON	315C
			ABUF	3518	ADSTBL	351C	BEST	3520
			BYCOMP	3528	BYLINE	352C	BYPASS	3530
			CLOSED	3538	CLSDUT	353C	COMADD	3540
			ENDNAM	3548	EXEC	354C	FBUF	3550
			FORMAT	3558	FREEMEM	355C	GETDS	3560
			GETL	3568	GETMEM	356C	GETSTR	3570
			INPUT	3578	IOPT	357C	LINSIZ	3580
			LDDOUT	3588	LOGPRC	358C	LOGSYS	3590
			NAMES	3598	NAMEV	359C	NOTES	35A0
			OBSERR	35A8	OBSPTR	35AC	OPNIN	35B0
			OPENL	35B4	OPNIN	35B8	OPNOUT	35BC
			PARM	35C4	POINT	35C0	PRTSUB	35CC
			PUTOUT	35D4	RLABEL	35D8	RWNO	35DC
			SASLOG	35E4	SETDS	35E8	SETDSL	35EC
			SETERR	35F4	STITLE	35F8	UBUF	35FC
			VAR	3604	VAR	3608	VARX	360C
			WLABEL	3614	WLABS	3618	EXECI	361C
			EXECT	3624	NOTEP	3628	NOTEPN	362C
			XCTL	3634	EFFMT	3638	PUNCH	363C
			DSINIT	3644	PARMDD	3648	ENTRY	364C
			SETLNO	368C	SASCOM	36A8	SASREN	368A
\$TIME *	3748	8						
IBMBCKD1*	3750	184						
			IBMBCKDP	3750	IBMBCKZP	3750	IBMBCKDD	3758
IBMBERR1*	38D8	6F0					IBMBCKZD	3758
			IBMBERRA	38D8	IBMBERRB	3926	IBMBERRC	3F16
IBMBOCL1*	3FC8	1B0						
			IBMBOCLA	3FC8	IBMBOCLB	3FCA	IBMBOCLC	3FCC
IBMBSA01*	4178	84					IBMBOCLD	3FCE
			IBMBASADA	4178				
IBMBSE01*	4230	F4						
			IBMBSE0A	4230				
IBMBSF01*	4328	DC						
			IBMBSF0A	4334				
IBMBSI01*	4408	280						
			IBMBSIDA	4408	IBMBSI0B	440A	IBMBSI0C	440C
			IBMBSIDOE	4410	IBMBSI0D	4412	IBMBSI0E	4414
IBMBSP11*	4688	2DC						
			IBMBSP1A	4688	IBMBSP1B	468A	IBMBSP1C	468C

Some Isn't Good Enough

- Some procedures output *some* data sets.
- Data sets contain *some* analysis results.



	Proc Name	Run Group Number	Description	Value
3	Mixed	1	Columns in Z	0
4	Mixed	1	Subjects	2
5	Mixed	1	Max Obs Per Subject	7
6	Mixed	1	Covariance Parameters	2
7	Mixed	1	Columns in X	16
8	Mixed	1	Columns in Z	0
9	Mixed	1	Subjects	2
10	Mixed	1	Max Obs Per Subject	7
11	Mixed	1	Covariance Parameters	28
12	Mixed	1	Columns in X	16
13	Mixed	1	Columns in Z	0
14	Mixed	1	Subjects	2
15	Mixed	1	Max Obs Per Subject	7

SAS 8.2 ODS Destinations

- LISTING
- HTML
- OUTPUT (data sets)
- RTF
- PRINTER (PDF, PostScript, PCL)



What's new?

Problem $\rightleftharpoons$ Opportunity

“Thanks for HTML. What about _____?”

HTML4

WML

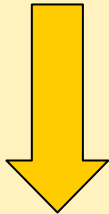
CSV

ODS XML

my XML

ODS MARKUP Destination

ODS MARKUP tagset = csv file = 'CSVEx.csv';



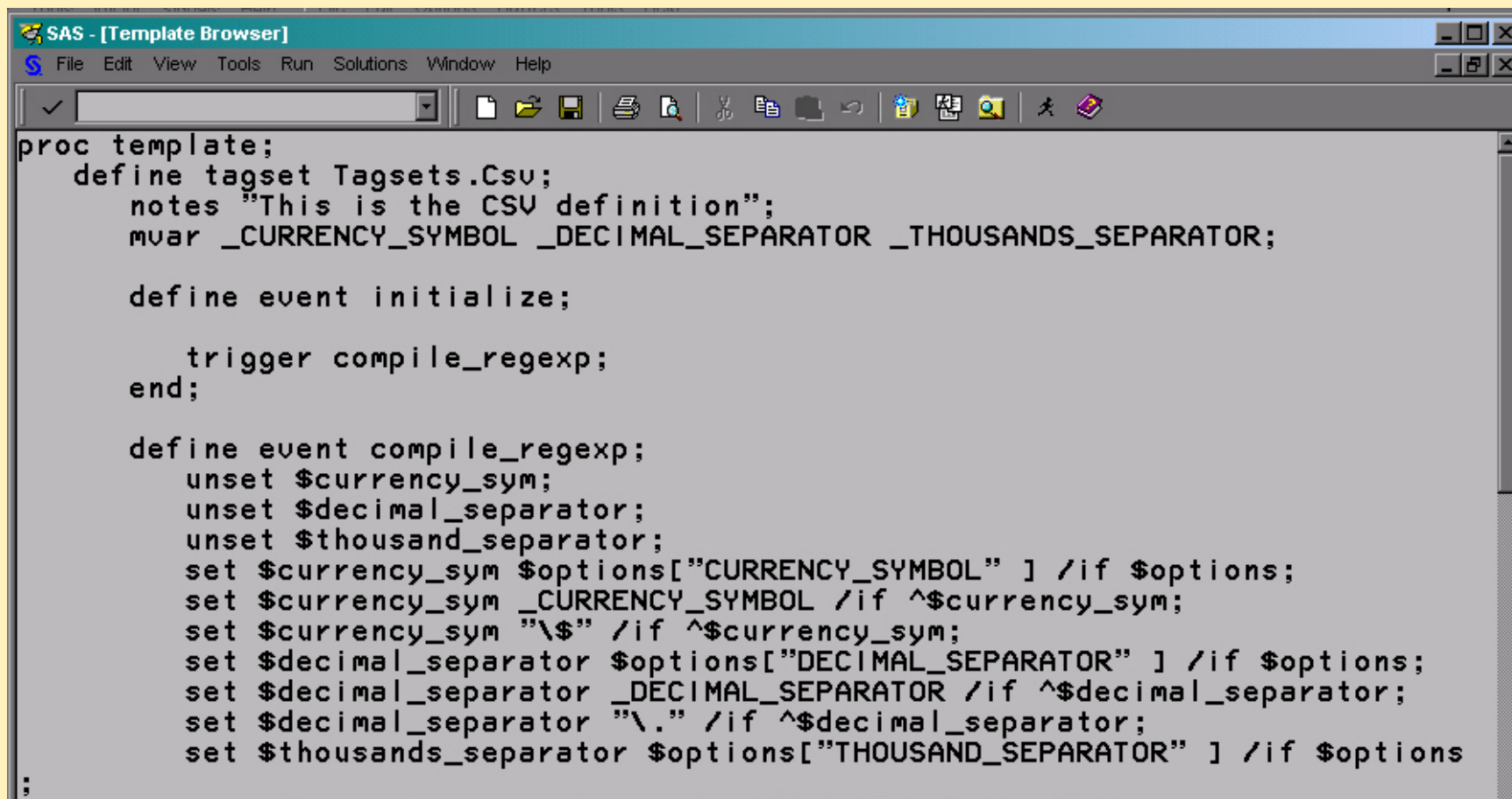
ODS Tagsets.CSV

file = 'CSVEx.csv';

Where Do Tagsets Live?

- SAS-supplied templates are in SASHELP.TMPLMST.
- Tagset templates are in TAGSETS folder.
- Results → View → Templates
- ODS **TAGSETS.HTML4** file = 'HTML4Ex.htm';
- ODS HTML equals ODS TAGSETS.HTML4.

CSV Tagset



```
proc template;
  define tagset Tagsets.Csv;
    notes "This is the CSV definition";
    mvar _CURRENCY_SYMBOL _DECIMAL_SEPARATOR _THOUSANDS_SEPARATOR;

    define event initialize;

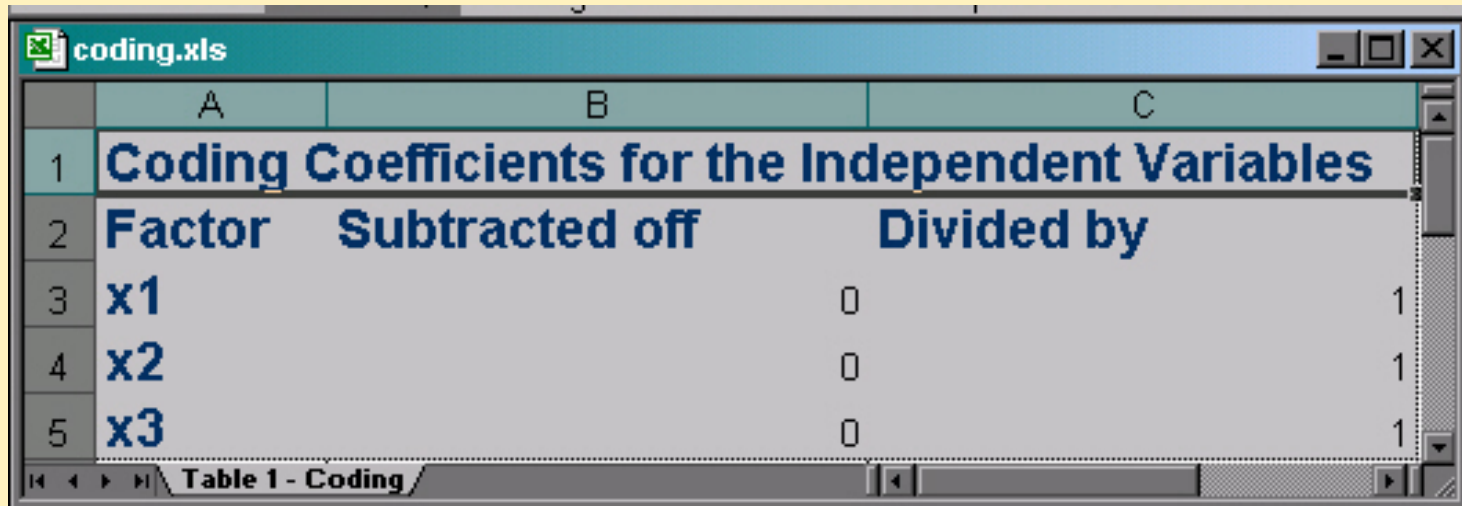
      trigger compile_regexp;
    end;

    define event compile_regexp;
      unset $currency_sym;
      unset $decimal_separator;
      unset $thousand_separator;
      set $currency_sym $options["CURRENCY_SYMBOL" ] /if $options;
      set $currency_sym _CURRENCY_SYMBOL /if ^$currency_sym;
      set $currency_sym "\$" /if ^$currency_sym;
      set $decimal_separator $options["DECIMAL_SEPARATOR" ] /if $options;
      set $decimal_separator _DECIMAL_SEPARATOR /if ^$decimal_separator;
      set $decimal_separator "." /if ^$decimal_separator;
      set $thousands_separator $options["THOUSAND_SEPARATOR" ] /if $options
;
;
```

CSV Tagset Output for MS Excel

```
"Obs", "Name", "Sex", "Age", "Height", "Weight"  
"1", "Alfred", "M", 14, 69.0, 112.5  
"2", "Alice", "F", 13, 56.5, 84.0  
"3", "Barbara", "F", 13, 65.3, 98.0  
"4", "Carol", "F", 14, 62.8, 102.5  
"5", "Henry", "M", 14, 63.5, 102.5  
"6", "James", "M", 12, 57.3, 83.0  
"7", "Jane", "F", 12, 59.8, 84.5  
"8", "Janet", "F", 15, 62.5, 112.5  
"9", "Jeffrey", "M", 13, 62.5, 84.0  
"10", "John", "M", 12, 59.0, 99.5  
"11", "Joyce", "F", 11, 51.3, 50.5  
"12", "Judy", "F", 14, 64.3, 90.0  
"13", "Louise", "F", 12, 56.3, 77.0  
"14", "Mary", "F", 15, 66.5, 112.0  
"15", "Philip", "M", 16, 72.0, 150.0  
"16", "Robert", "M", 12, 64.8, 128.0  
"17", "Ronald", "M", 15, 67.0, 133.0  
"18", "Thomas", "M", 11, 57.5, 85.0  
"19", "William", "M", 15, 66.5, 112.0
```

ExcelXP Tagset Output for MS Excel

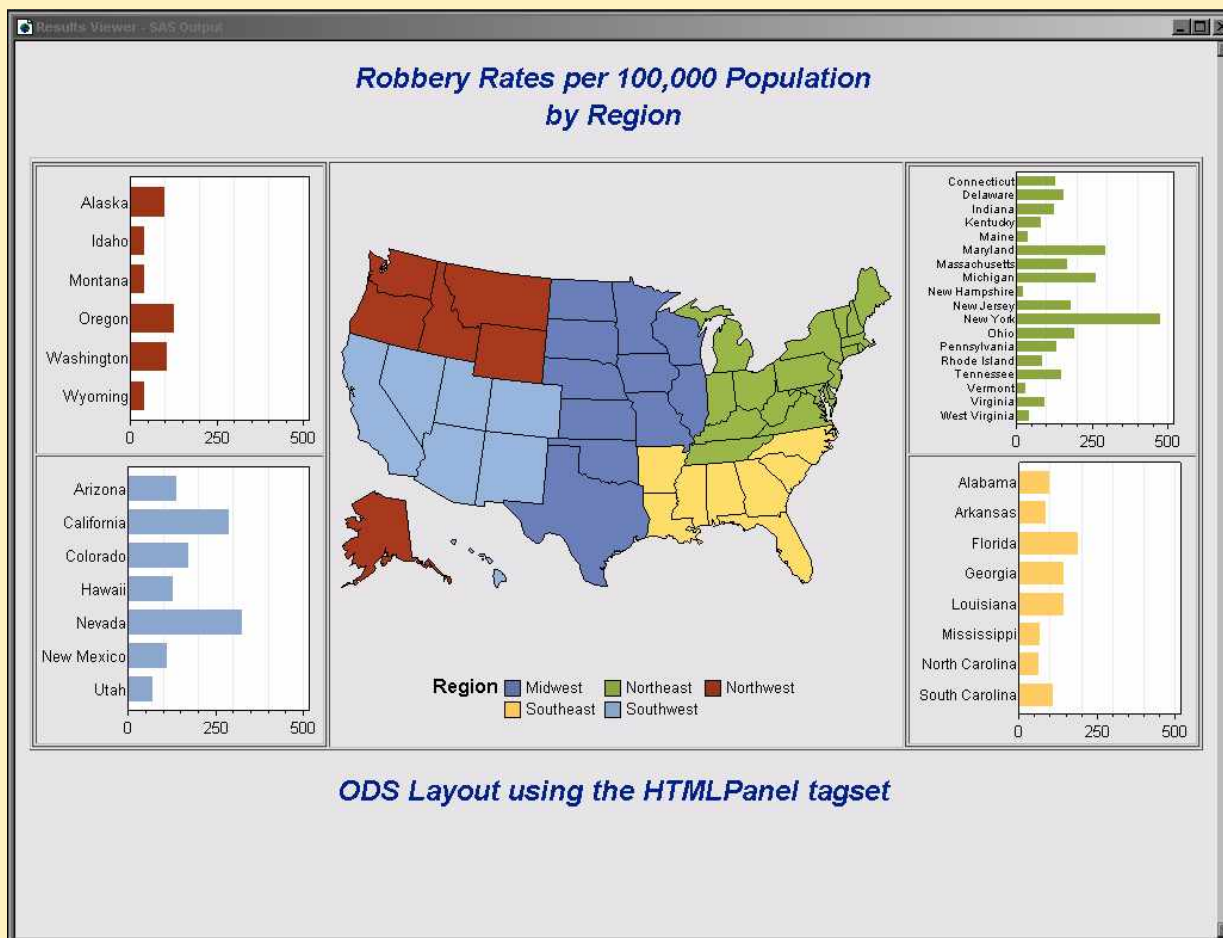


The screenshot shows an Excel window titled 'coding.xls'. The spreadsheet contains a table with the following data:

	A	B	C
1	Coding Coefficients for the Independent Variables		
2	Factor	Subtracted off	Divided by
3	x1	0	1
4	x2	0	1
5	x3	0	1

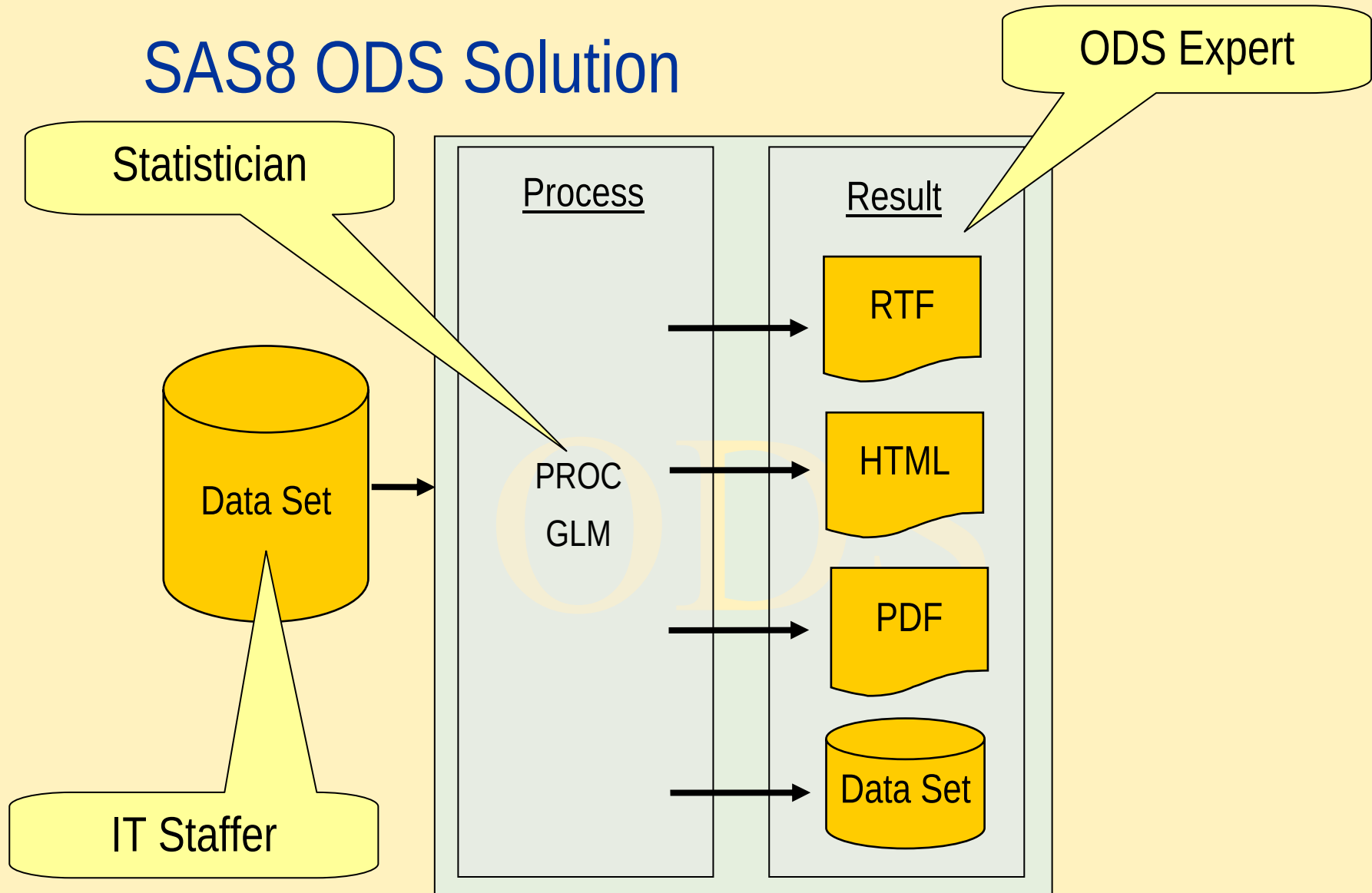
The table is labeled 'Table 1 - Coding' in the bottom status bar.

HTMLPANEL Tagset Output

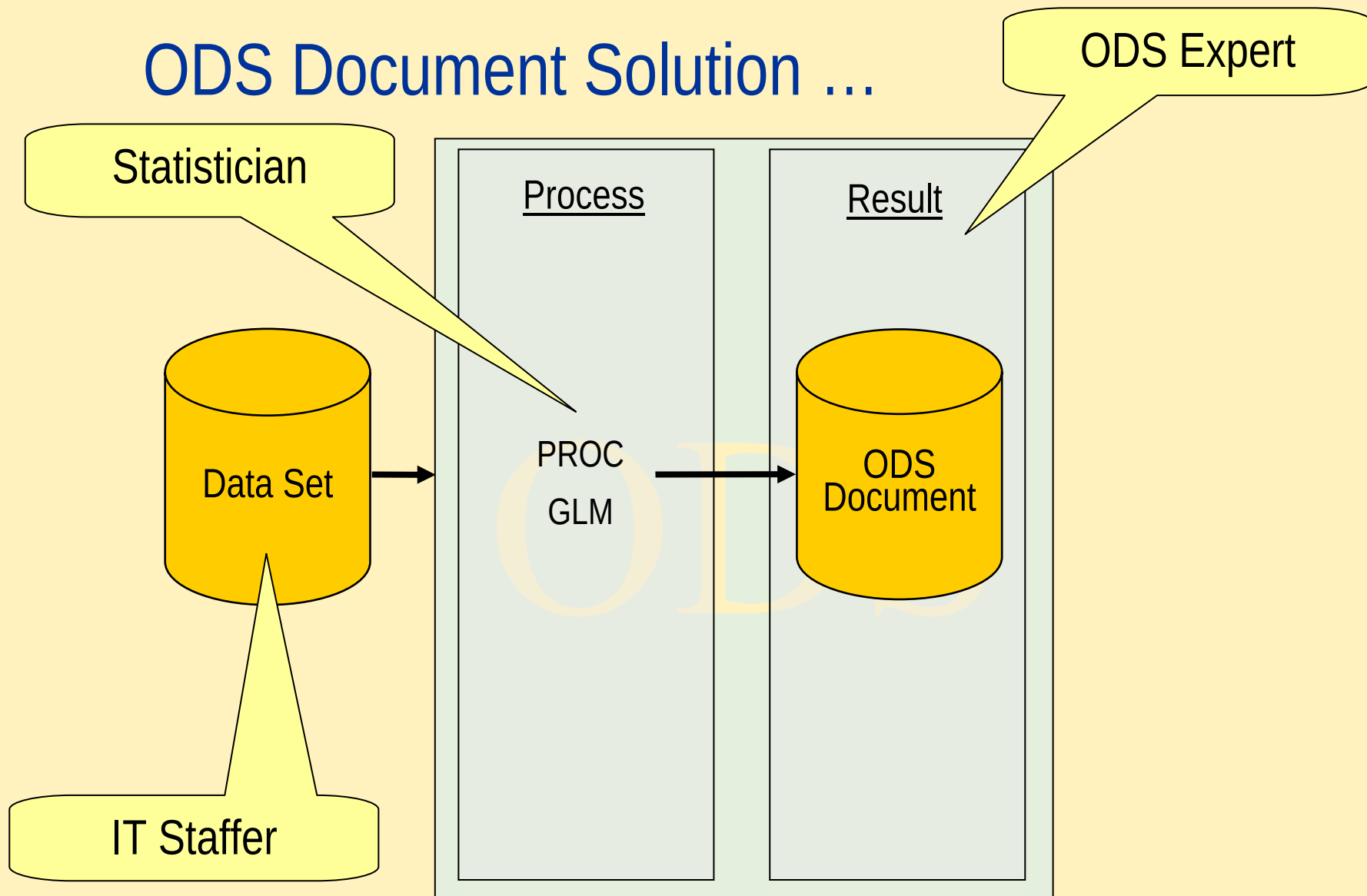


Problem $\rightleftharpoons$ Opportunity

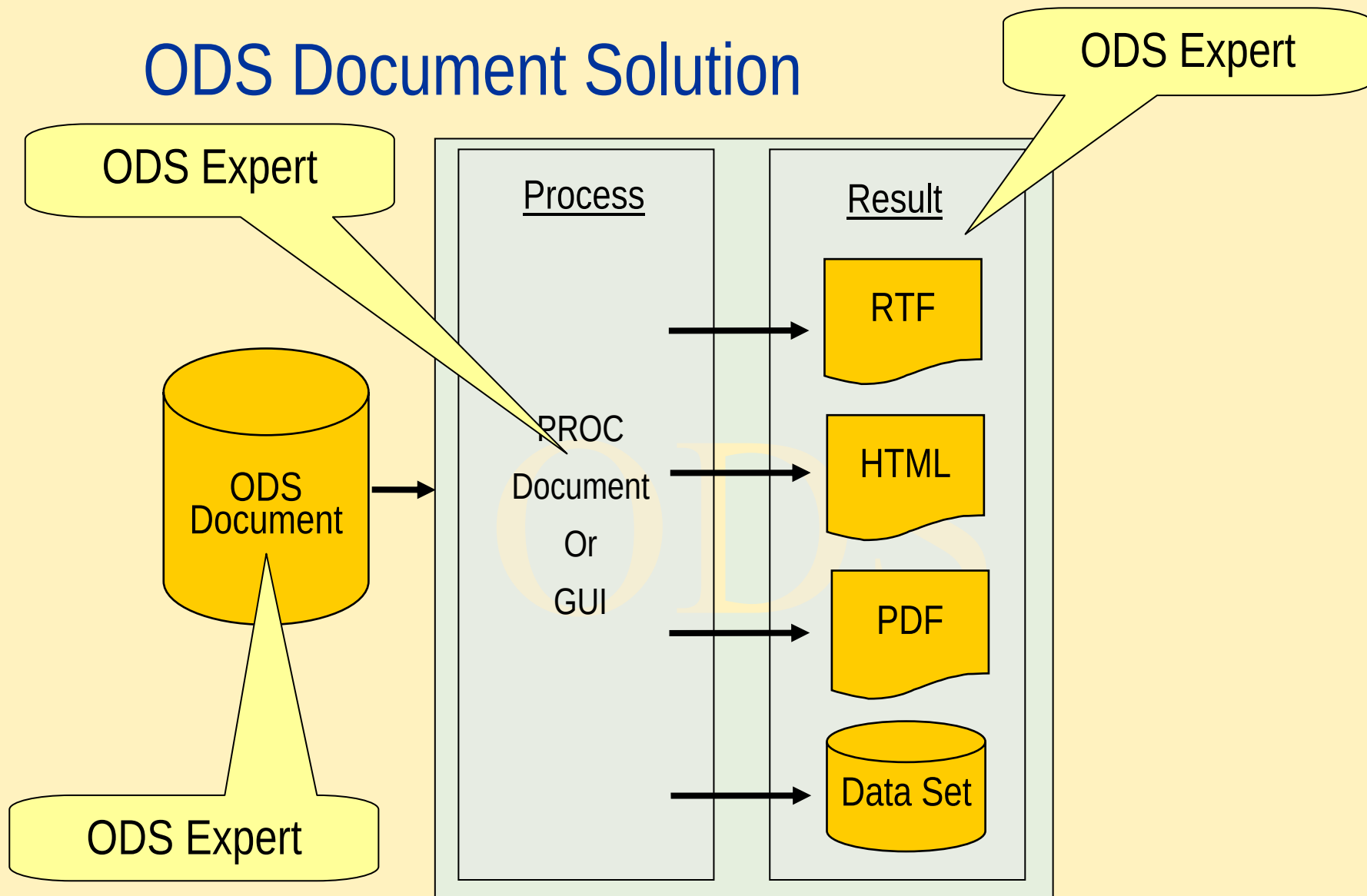
SAS8 ODS Solution



ODS Document Solution ...



ODS Document Solution



ODS DOCUMENT Creation

```
ods document name=sales(write);  
title 'Quarterly Sales By Product';  
proc tabulate data=sashelp.prdsal2  
              format=dollar12.2;  
class product quarter;  
var actual;  
table product, quarter*actual*sum='';  
run;  
ods document close;
```

ODS DOCUMENT Replay

```
proc document name=sales;  
replay;  
run;  
quit;
```

Documents Window (Results → View → Documents)

The screenshot displays the SAS software interface. On the left, the 'Documents' window shows a hierarchical tree structure of the current project. The tree is expanded to show the 'Fit Statistics' output for the 'The GLM Procedure'. The 'Fit Statistics' output is highlighted in green. The 'Results Viewer - SAS Output' window on the right displays the GLM results, including the dependent variable 'X' and a table of fit statistics.

Documents Window Structure:

- Documents
 - Sasuser.Tab
 - Sasuser.Odsmodel
 - Sasuser.Odsglm
 - Sasuser.Model
 - Sasuser.Glmreg1
 - The GLM Procedure
 - Data
 - Class Levels
 - Number of Observations
 - Analysis of Variance
 - X
 - Note
 - Overall ANOVA
 - Fit Statistics
 - Type I Model ANOVA
 - Solution
 - Note
 - y
 - Note
 - Overall ANOVA
 - Fit Statistics
 - Type I Model ANOVA
 - Solution
 - Note
 - The Reg Procedure
 - MODEL1
 - Fit
 - X
 - Number of Observations
 - Analysis of Variance
 - Fit Statistics
 - Parameter Estimates
 - y
 - Number of Observations
 - Analysis of Variance
 - Fit Statistics
 - Parameter Estimates

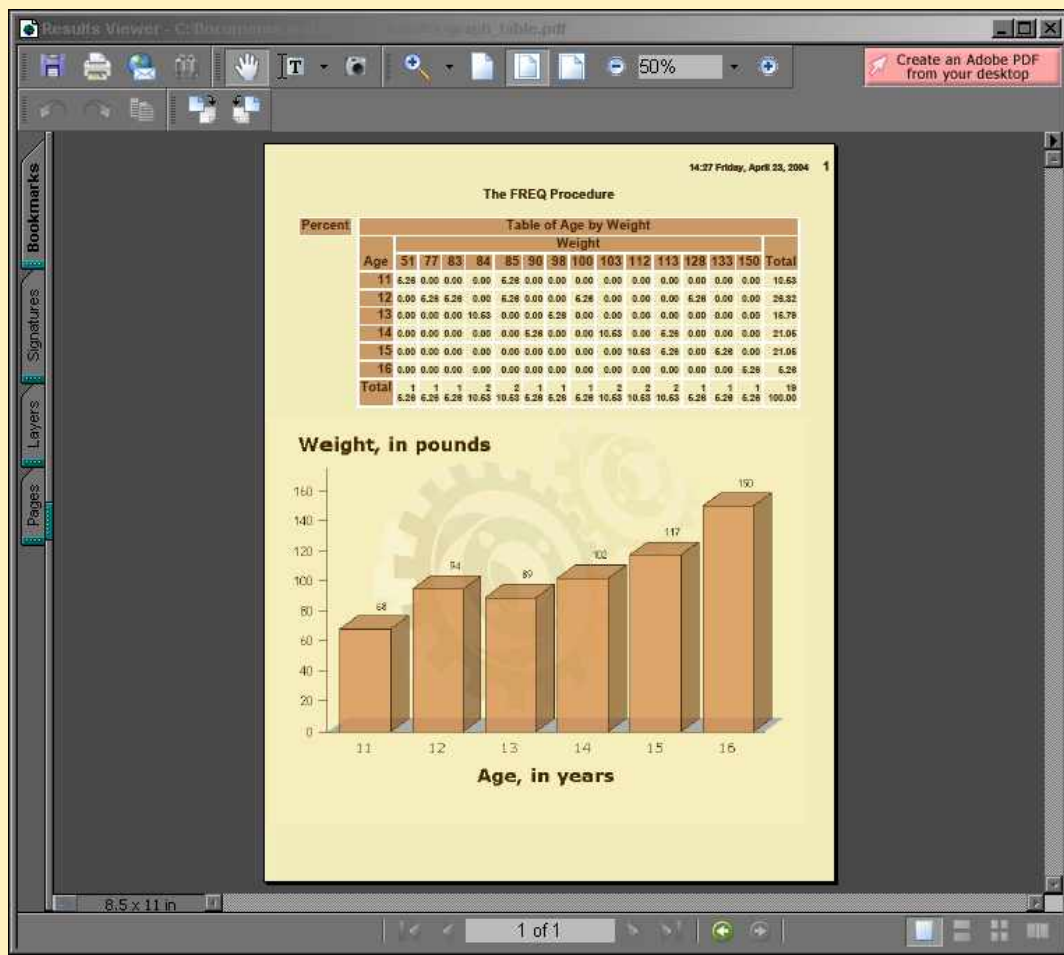
*** GLMREG1: Compare parameter estimates from REG ***
GLM RESULTS

The GLM Procedure

Dependent Variable: X

R-Square	Coeff Var	Root MSE	X Mean
1.000000	0	0	7.605263

GRAPH Styles



“Do it the same, but better!”



Same But Better Sampling

- PDF compression and FDA compliance
- RTF “Page X of Y” and SASDATE
- COLUMNS= and TEXT=
- Decimal justification
- Variable name list shortcuts (TABULATE)



COLUMNS=

out4.rtf - Microsoft Word

File Edit View Insert Format Tools Table Window Help

file:///U:/out4.rtf

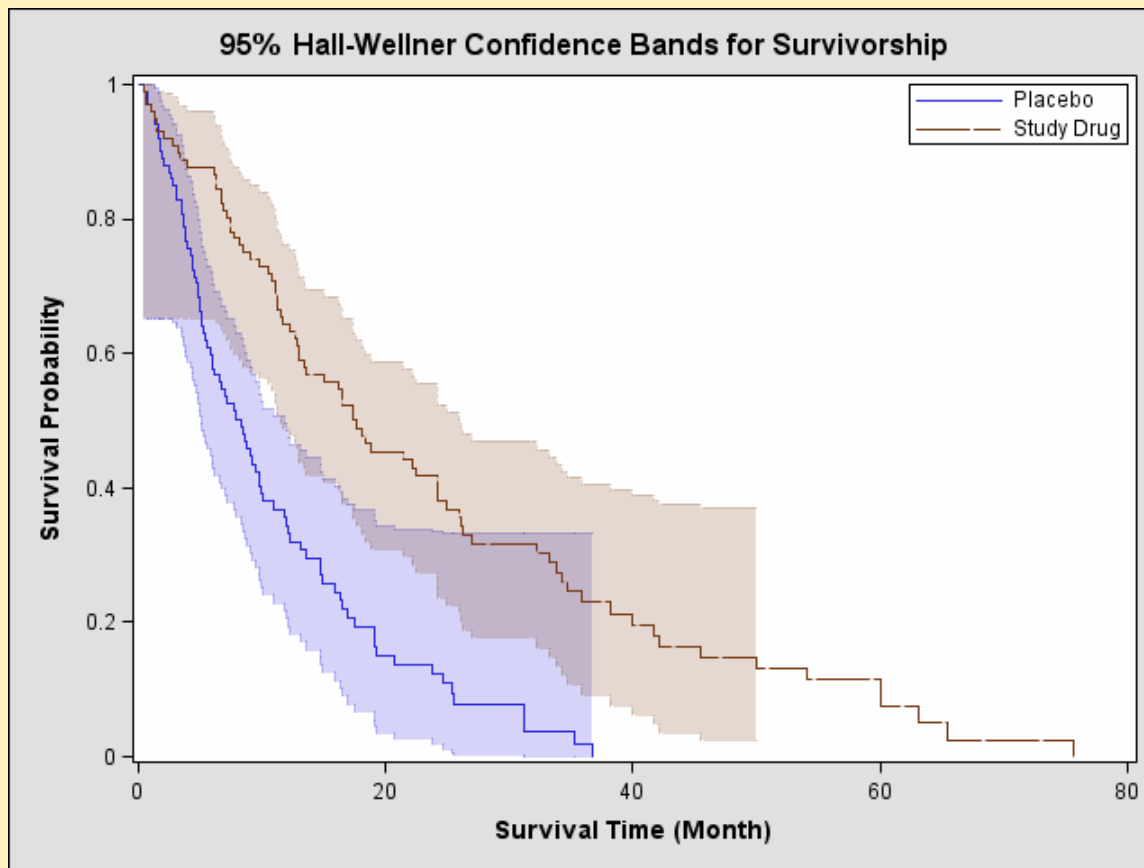
Obs	COUNTRY	STATE	COUNTY	ACTUAL	PREDICT
300	U.S.A.	California		\$2,075.36	\$650.08
301	U.S.A.	California		\$889.44	\$2,420.80
302	U.S.A.	California		\$248.88	\$858.16
303	U.S.A.	California		\$1,595.28	\$1,905.36
304	U.S.A.	California		\$1,268.88	\$1,301.52
305	U.S.A.	California		\$2,516.00	\$2,355.52
306	U.S.A.	California		\$1,256.64	\$2,210.00
307	U.S.A.	California		\$1,666.00	\$660.96
308	U.S.A.	California		\$1,872.72	\$731.68
309	U.S.A.	California		\$1,263.44	\$2,284.80
310	U.S.A.	California		\$323.68	\$2,686.00
311	U.S.A.	California		\$1,632.00	\$939.76
312	U.S.A.	California		\$527.68	\$2,433.04
313	U.S.A.	California		\$1,591.20	\$490.96
314	U.S.A.	California		\$73.44	\$2,239.92
315	U.S.A.	California		\$2,044.08	\$1,739.44
316	U.S.A.	California		\$2,000.56	\$2,329.68
317	U.S.A.	California		\$167.28	\$2,739.04
318	U.S.A.	California		\$13.60	\$2,603.04
319	U.S.A.	California		\$648.72	\$1,679.60
320	U.S.A.	California		\$1,097.52	\$496.40
321	U.S.A.	California		\$1,478.32	\$2,645.20
322	U.S.A.	California		\$2,545.92	\$189.04
323	U.S.A.	California		\$1,576.24	\$945.20
324	U.S.A.	California		\$1,015.92	\$2,851.92
325	U.S.A.	California		\$338.64	\$2,887.28
326	U.S.A.	California		\$307.36	\$1,551.76

Obs	COUNTRY	STATE	COUNTY	ACTUAL	PREDICT
327	U.S.A.	California		\$1,753.04	\$2,052.24
328	U.S.A.	California		\$160.48	\$1,112.48
329	U.S.A.	California		\$2,707.76	\$739.84
330	U.S.A.	California		\$2,492.88	\$2,781.20
331	U.S.A.	California		\$621.52	\$2,456.16
332	U.S.A.	California		\$2,038.64	\$1,565.36
333	U.S.A.	California		\$753.44	\$1,400.80
334	U.S.A.	California		\$2,613.92	\$811.92
335	U.S.A.	California		\$2,514.64	\$1,289.28
336	U.S.A.	California		\$1,432.08	\$1,648.32
337	U.S.A.	California		\$2,812.48	\$636.48
338	U.S.A.	California		\$1,160.08	\$2,272.56
339	U.S.A.	California		\$1,045.84	\$2,176.00
340	U.S.A.	California		\$2,715.92	\$624.24
341	U.S.A.	California		\$2,703.68	\$2,291.60
342	U.S.A.	California		\$157.76	\$1,272.96
343	U.S.A.	California		\$208.08	\$1,755.76
344	U.S.A.	California		\$2,038.64	\$2,503.76
345	U.S.A.	California		\$2,260.32	\$2,109.36
346	U.S.A.	California		\$1,610.24	\$1,962.48
347	U.S.A.	California		\$2,511.92	\$2,155.60
348	U.S.A.	California		\$2,477.92	\$2,389.52
349	U.S.A.	California		\$1,680.96	\$499.12
350	U.S.A.	California		\$2,040.00	\$998.24
351	U.S.A.	California		\$2,068.56	\$1,876.80
352	U.S.A.	California		\$349.52	\$2,272.56
353	U.S.A.	California		\$2,214.08	\$280.16

Page 1 Sec 1 1/8 At 1"5" Ln 20 Col 1 REC TRK EXT DVR English (U.S.)

What's upcoming?

ODS Statistical Graphics



ODS Graphics Creation

```
ods graphics on;
```

```
proc lifetest data=surv noprint;
```

```
  time surv*censor(1);
```

```
  survival out=_null_ bandmax=50
```

```
    plots=(survival stratum hwb);
```

```
  strata trt;
```

```
  id patient;
```

```
  format trt trt.;
```

```
run;
```

```
ods graphics off;
```

Measured Tagsets

tab.map - Microsoft Word

File Edit View Insert Format Tools Table Window Help

Type a question for help

100% Times 13 B I U

Favorite Go \sasqhroot\usasdck\tab.map

Final Showing Markup Show

					VERY FAST	1
					SLOW	1
					AVERAGE	1
					FAST	1
					VERY FAST	1
				SUN ROOF	VERY SLOW	1
					SLOW	1
					AVERAGE	1
					FAST	1
					VERY FAST	1
			STANDARD OPTIONS	POWER STEERING	VERY SLOW	1

(Continued)

*** odrtag06.sas: Measured tagset with uniform option ***
 my favorite cars
 this is a pretty large dataset

					NUMBER	
DATSUN 200SX	LIGHT BLUE	STANDARD OPTIONS	POWER STEERING	SLOW	1	
				AVERAGE	1	
				FAST	1	
				VERY FAST	1	
			SUN ROOF	VERY SLOW	1	
				SLOW	1	
				AVERAGE	1	
				FAST	1	

Page 1 Sec 1 1/3 At Ln Col REC TRK EXT DVR English (U.S.)

FREQ Crosstabs Template

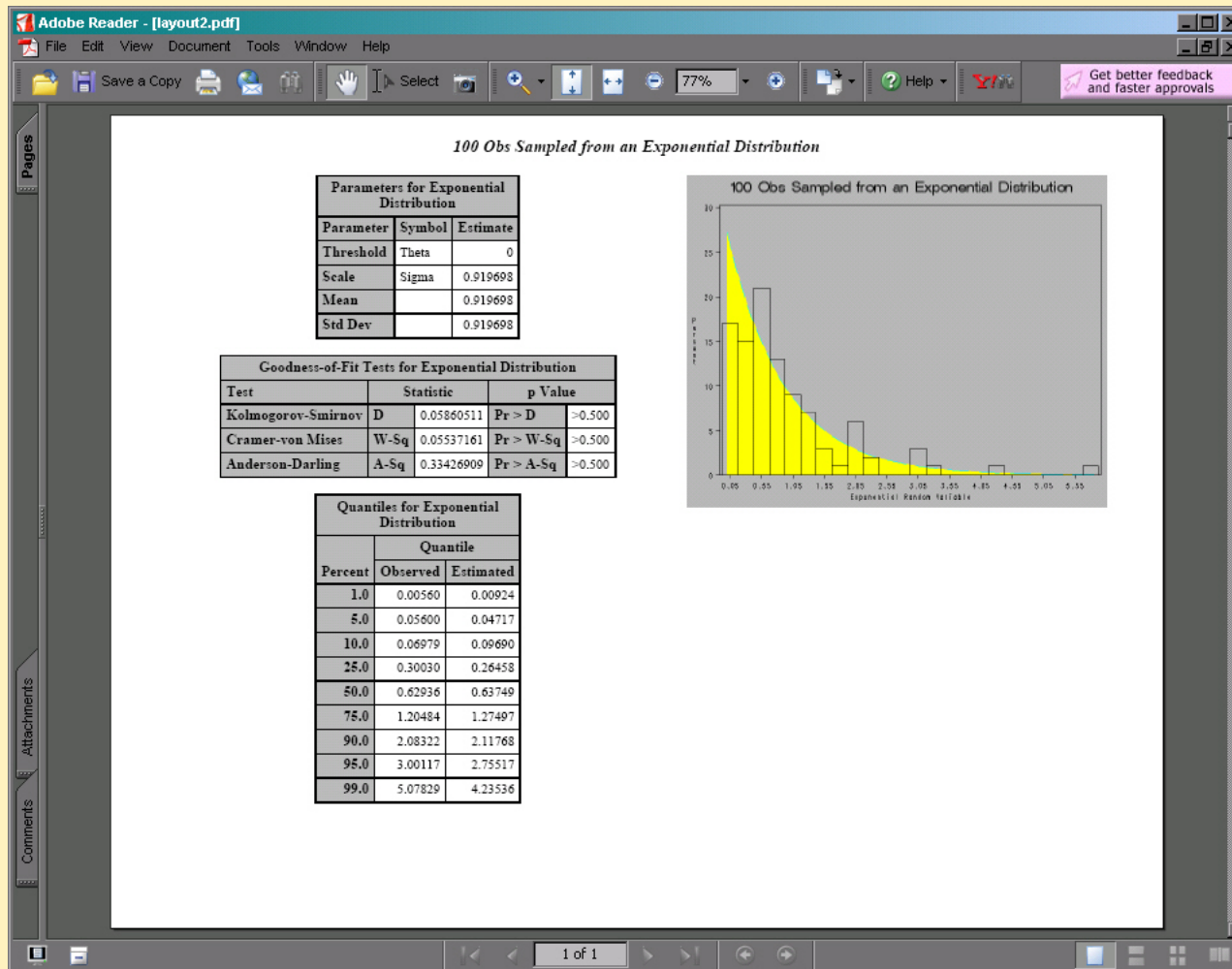
Results Viewer - SAS Output

The FREQ Procedure

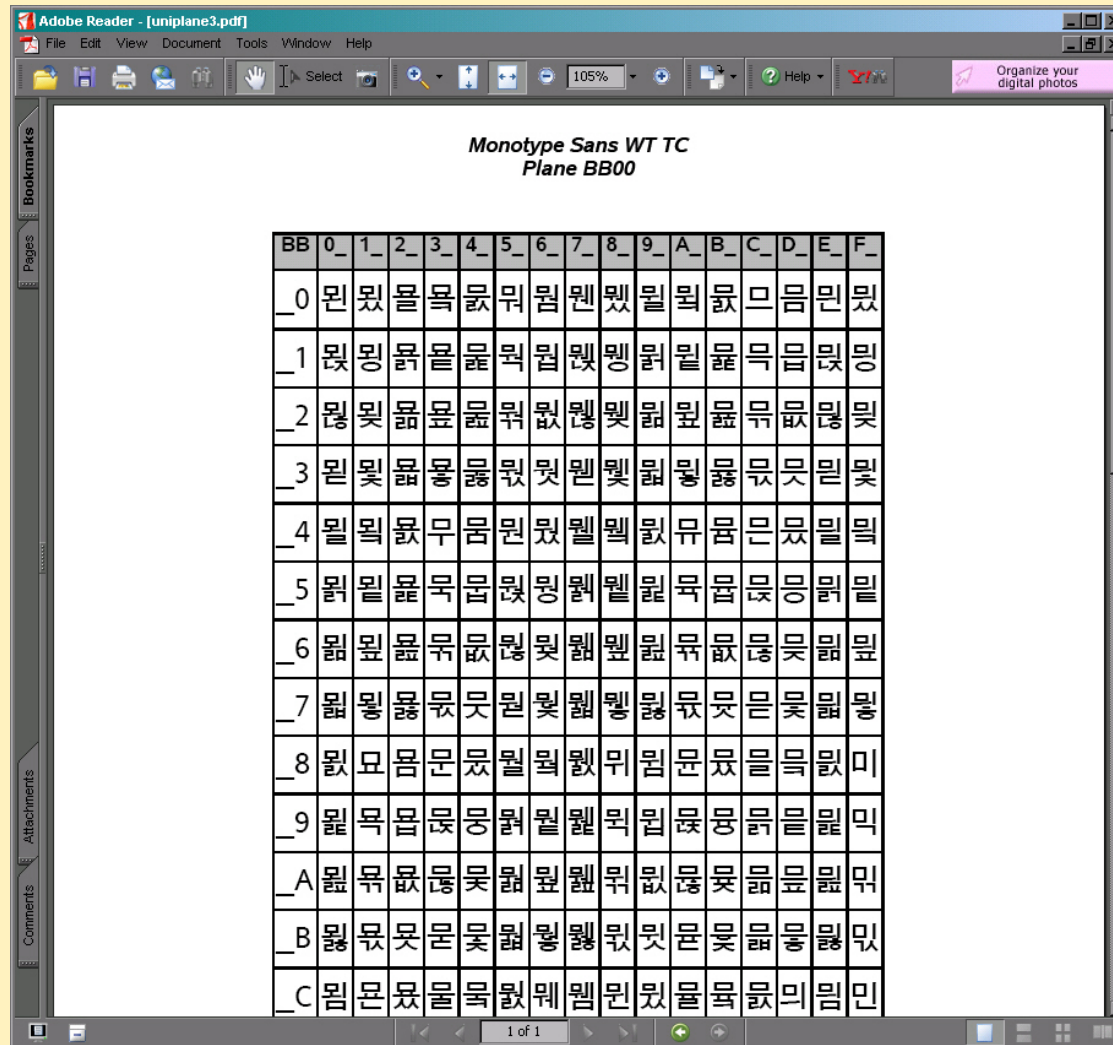
Table of Citygovt by Robgrp							
Citygovt	Robgrp						Total
	?	Not Known	100 or Less	101-200	201-300	Over 300	
?	0	0	0	1	0	0	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
Not Applicable	0	10	0	0	0	0	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
Council Manager	0	0	47	63	49	52	211
	.	.	12.30	16.49	12.83	13.61	55.24
	.	.	22.27	29.86	23.22	24.64	
	.	.	55.95	58.88	62.03	46.43	
Commission	0	0	6	7	3	5	21
	.	.	1.57	1.83	0.79	1.31	5.50
	.	.	28.57	33.33	14.29	23.81	
	.	.	7.14	6.54	3.80	4.46	
Mayor Council	1	0	31	37	27	55	150
	.	.	8.12	9.69	7.07	14.40	39.27
	.	.	20.67	24.67	18.00	36.67	
	.	.	36.90	34.58	34.18	49.11	
Total	.	.	84	107	79	112	382
	.	.	21.99	28.01	20.68	29.32	100.00

Frequency Missing = 12

ODS Layout



New Fonts



Same But Better Sampling #2

- PRINTER text decoration
- PDF encryption
- PDF table of contents control
- Inline formatting (rich text)



ODS Online

- Base SAS Community at <http://support.sas.com/>
- OnlineDoc
<http://support.sas.com/documentation/onlinedoc/sas9doc.html>
- ods@sas.com

2005 ODS Seminar Series

<http://sww.sas.com/~sasdck/seminars2005.htm>

Presenter	Topic	R1478	V333
David Kelley	What's New and Upcoming in SAS 9 ODS	Feb. 7 3:00-4:00pm	Feb. 15 2:00-3:00pm
Eric Gebhart	ODS and excelXP: Using the ExcelXP tagset to it's full potential	Feb. 28 3:00-4:00pm	Mar. 3 2:00-3:00pm
Wayne Hester	Good and Evil In the Garden of RTF	Mar. 21 3:00-4:00pm	Mar. 25 2:00-3:00pm
Dan O'Connor	ODS Statistical Graphics	May 2 3:00-4:00pm	May 6 2:00-3:00pm
Scott Huntley	ODS PRINTER	May 16 3:00-4:00pm	May 20 2:00-3:00pm
Kevin Smith	ODS Document and PROC DOCUMENT	Jun. 13 3:00-4:00pm	Jun. 17 2:00-3:00pm
Tim Hunter	9.2 FREQ crosstabs	Jun. 27 3:00-4:00pm	Jul. 1 2:00-3:00pm



The Power to Know®