

A Peek at **PROC DOCUMENT**

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A Peek at **PROC DOCUMENT**

- New to Version 9 of the SAS System
 - Tools to Manage ODS Objects
 - Enhances User Ability to Work with Output Objects
 - Saves programming time and resources
 - Allows you to save and re-use (replay) objects between SAS Sessions

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ODS Overview

Output Delivery System

- Production in Version 8 of the SAS System
 - Revolutionized methods by which Procedure-generated output can be delivered
 - Output Objects sent to Destinations
 - Templates and designated Destinations control appearance of output.

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ODS Overview

ODS Functionalities

- Renders Output to "Destinations"
 - Output Window (LISTING Destination)
 - SAS Data Sets (OUTPUT Destination)
 - HTML Files (HTML Destination)
 - Postscript or PDF Files (PRINTER PS or PDF Destination)
 - CSV Files (CSV Destination, Experimental in Release 8.2, Production in 9.0)
 - Other Destinations

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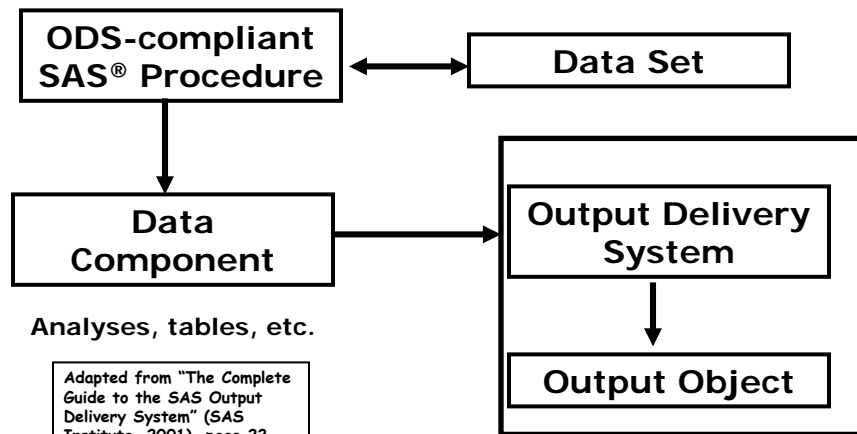
ODS Overview

- ODS Functionalities
 - TEMPLATES
 - Appearance of output
 - Colors, fonts, background, graphics images, etc.
 - PROC TEMPLATE
 - New to Version 8, allows users to create and manage Templates stored in "itemstores"
 - ODS STYLE Elements
 - PROCs PRINT, REPORT & TABULATE
 - Use of ODS Statements within the Procedure step

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How Does the Output Delivery System Work?

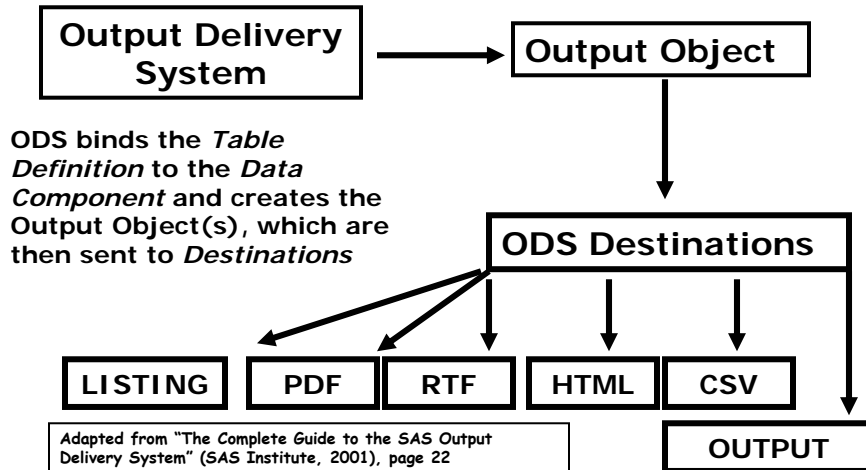


Adapted from "The Complete Guide to the SAS Output Delivery System" (SAS Institute, 2001), page 22

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How Does the Output Delivery System Work?



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V8 ODS Limitations

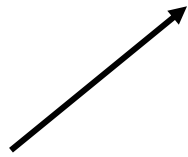
- Output is immediately rendered as objects
 - Objects cannot be stored or manipulated by user
- Procedure needs to be re-run if output is desired in another format
 - Can be time consuming and resource intensive, especially if the PROC is applied against large files

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Solution: the **DOCUMENT** ODS Destination and **PROC DOCUMENT**

- Experimental in Release 8.2
- Production in 9.0
- Documentation available for download from the SAS web site
 - <http://support.sas.com/rnd/base/topics/odsdocument/>



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Learning About the ODS **DOCUMENT** Destination and **PROC DOCUMENT**

support.sas.com > Communities > Base

Base SAS®

ODS DOCUMENT Resources


- [ODS Document Reference](#)
Find out what an ODS document is, and why you would want to use one.
- [ODS DOCUMENT Statement](#)
Learn how to store procedure or DATA step output in an ODS document.
- [The DOCUMENT Procedure](#)
Browse, modify, and replay ODS documents with a batch interface.
- [SASEDOC Libname Engine](#)
Make output objects stored in an ODS document look like SAS data sets.

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Learning About the ODS DOCUMENT Destination and PROC DOCUMENT



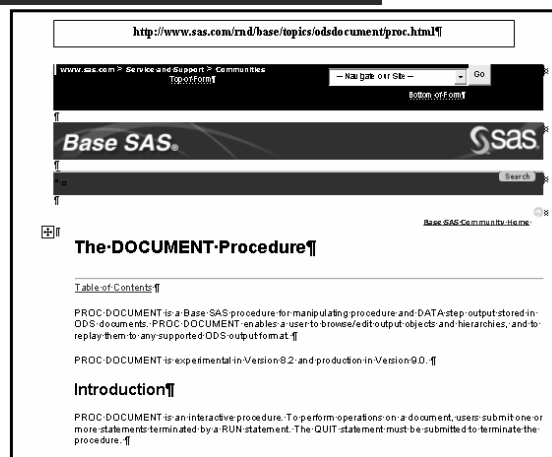
The DOCUMENT Procedure

Overview: *DOCUMENT* Procedure 2
Why Use the *DOCUMENT* Procedure? 2
DOCUMENT Procedure Terminology 2
Syntax: *DOCUMENT* Procedure 3
PROC DOCUMENT Statement 4
COPY Statement 6
DELETE Statement 6

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Learning About the ODS DOCUMENT Destination and PROC DOCUMENT



http://www.sas.com/rnd/base/topics/odsdocument/proc.html

www.sas.com > Service and Support > Communities > Topoffoint

Base SAS.

The DOCUMENT Procedure

Table of Contents

PROC DOCUMENT is a Base SAS procedure for manipulating procedure and DATAstep output stored in ODS documents. PROC DOCUMENT enables a user to browse/dit output objects and hierarchies, and to replay them to any supported ODS output format.

PROC DOCUMENT is experimental in Version 8.2 and production in Version 9.0.

Introduction

PROC DOCUMENT is an interactive procedure. To perform operations on a document, users submit one or more statements terminated by a RUN statement. The QUIT statement must be submitted to terminate the procedure.

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Key Terms and Concepts

□ **DOCUMENT ODS *Destination***

- New to SAS 9, permits storage and subsequent manipulation of ODS Objects that are stored as **DOCUMENTS**

□ **PROC DOCUMENT**

- Also new to SAS 9, an interactive BASE SAS Procedure that allows users to work with Objects stored as *DOCUMENTS* via the **ODS DOCUMENT *Destination***

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Key Terms and Concepts

□ The **DOCUMENT Window** Graphical User Interface (GUI)

- A new (to SAS 9) window that allows you to perform tasks on your documents with point-and-click commands rather than using PROC DOCUMENT Syntax
 - Note: the ODSDOCUMENTS command must be executed in order for the DOCUMENT Window to appear.

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What is a "Document"?

- ODS Output Objects in "raw" form
 - Data component plus table component
 - Output Objects are stored as a hierarchical file called a **DOCUMENT**
 - Documents are either
 - Permanent
 - Temporary
 - Documents are manipulated using
 - The DOCUMENT Window
 - PROC DOCUMENT Syntax

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PROC DOCUMENT Capabilities

- Transform report without rerunning the analysis or repeating the data base query
- Control the report's structure
- Display output to any other ODS Destination without having to rerun your SAS programs
- Manage output
- Store the output

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Example 1: Default ODS Behavior

```
ods proclabel 'Predictive Model';  
proc logistic data=sasdata.insurance descending;  
format ins insfmt.;  
model ins= ddabal acctage atmamt crscore income posamt  
savbal/selection = stepwise  
ctable pprob = .10 to .50 by .10;  
title 'Global Title1: A Peek at PROC DOCUMENT';  
title2 'Predictive Model via PROC LOGISTIC';  
run;
```

Default ODS Behavior. PROC LOGISTIC sends data tables to ODS, which in turn renders them as LISTING destination (Output Window) objects, which can be viewed in the Output Window and via the Results Window

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Example 1: Default ODS Behavior

The LOGISTIC Procedure

Model Information	
Data Set	SASDATA.INSURANCE
Response Variable	INS
Number of Response Levels	2
Number of Observations	5830
Model	Binary logit
Optimization Technique	Fisher's scoring

Response Profile

Ordered Value	INS	Total Frequency
1	Responded	2422
2	No Response	4408

Probability modeled is INS='Responded'.
NOTE: 3789 observations were deleted due to missing values for the response or variables.

Stepwise Selection Procedure

Step 0. Intercept entered:

Model Convergence Status
Convergence criterion (GCONU=1E-8) satisfied.

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The Document Window



Submitting the ODSDOCUMENT command opens the new (to SAS 9) Document Window

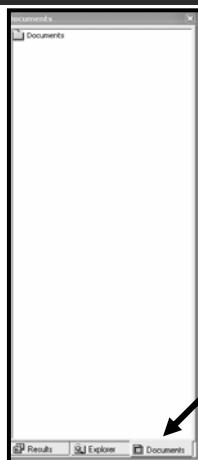
```
dm 'odsdocument';
```

The Document Window can also be opened with the DM (Display Manager) Command

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The Document Window



The DOCUMENT Window is used to manage ODS Documents. But, first, we need to create a document!

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DOCUMENT vs. RESULTS Windows

Task	Document Window	Results Window
View SAS documents, including those stored in SAS Libraries	YES	YES
View output objects, such as PDF, HTML, etc	YES	YES
View results after creating a new output object	YES	YES
Customize layout/ordering of OBJECTS	YES	NO
View document properties	YES	YES
View OBJECT properties	NO	YES
Delete/rename entries	YES	YES
Copy/move DOCUMENTS	YES	NO

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The ODS DOCUMENT Statement

```

→ ods document name=mydoc1 ;
ods proclabel 'Predictive Model';
proc logistic data=sasdata.insurance descending;
format ins insfmt.;
model ins= ddabal acctage atmamt crscore income posamt
savbal/
selection = stepwise
ctable pprob = .10 to .50 by .10;
title 'Global Title: A Peek at PROC DOCUMENT';
title2 'Predictive Model via PROC LOGISTIC';
run;
→ ods document close;

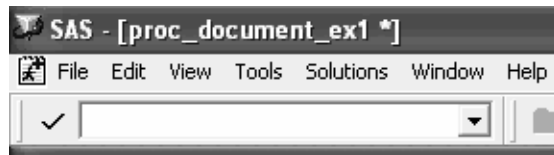
```

By opening (and then closing) the DOCUMENT Destination, a document called MYDOC1 is created and shown in the DOCUMENT Window. By default, documents are temporary files and are stored in the WORK Library.

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Executing the ODSDOCUMENT command



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The DOCUMENTS Window



Submitting the ODSDOCUMENT Command opens the DOCUMENTS Window..

In order to send ODS Objects to the DOCUMENTS Destination, you must first open that destination with the ODS DOCUMENT Statement, as shown on the next slide

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The DOCUMENTS Window

```
ods listing close;  
→ ods document name=logistic;  
proc logistic data=sugi28.predmodel2;  
by territory;  
model respond = checking_balance mortgage_balance  
length_of_residence customer_age risk_score  
credit_card_balance/selection = stepwise;  
title2 'Predictive Model with Stepwise Selection';  
run;  
→ ods document close;  
ods listing;
```

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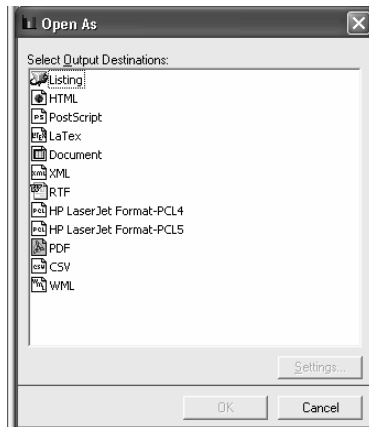
The ODS DOCUMENT Statement

The screenshot shows the SAS DOCUMENTS window with a tree view of ODS destinations. The tree is organized into steps (Step 0, Step 1, Step 2, Step 3, Step 4). Step 4 contains the following destinations: Model Building Summary, Parameter Estimates, Odds Ratios, Association Statistics, and Classification Table. A callout box on the right highlights these five destinations with icons. A text box below the callout states: "Document Destination Icons in the Document Window. New to Version 9".

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Working in the Document Window



Output Destinations can now be specified from the "Open As..." window. This permits you to send objects to multiple output destinations without having to re-run the procedure every time you need the output sent to a different destination.

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Working in the Document Window

Other Tasks from the Document Window

- Rename Objects
- Exclude Objects
 - Re-Show Excluded Objects
- Replay Document
- Create New Objects
- Re-Order Objects ←

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Working in the Document Window

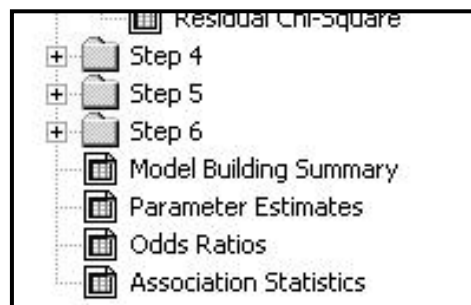
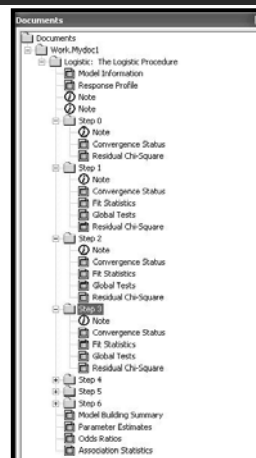
□ Example:

- Create new documents for each territory
 - Move output from existing documents in to the new documents
 - Replay new documents
 - We will take ODS output objects and reorder them in to new documents, and then “replay” the new documents to ODS destinations

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Working in the DOCUMENT Window



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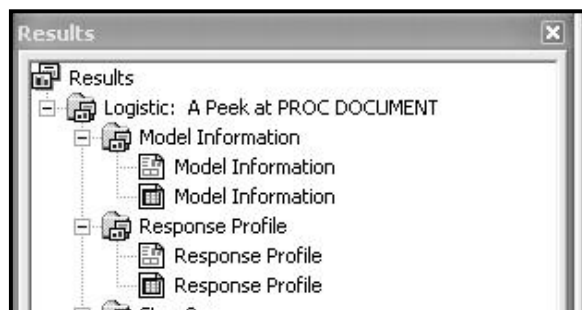
DOCUMENT vs. RESULTS Windows

- Some features and functionalities common to both windows
- When the DOCUMENTS destination is open, the RESULTS Windows Shows the DOCUMENT icon for each object.
- Consider the following example...

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DOCUMENT vs. RESULTS Windows



RESULTS Window showing both LISTING (default) and OBJECT Destination Icons. Clicking on the OBJECT icon will show destination's contents in the RESULTS Window

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Saving Documents

- You can save ODS Documents just as you can save
 - SAS data sets
 - Graphics catalogs
 - Formats Catalogs
 - Templates

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Why Save Documents?

- Avoids having to re-run PROCs between SAS Sessions
- Documents can be shared among SAS users
 - Note: Documents *cannot* be transported across operating systems
- Create one big document and then
 - Extract, Manipulate, Replay
 - As required

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Saving Documents

- Use a two-level name for your document

```
ods document name=sugi28.mydoc2(write);
```

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Saving Documents

movie5	9,678 KB	Video Clip	3/5/2003 6:56 PM
mydoc2	213 KB	SAS System Item Store	3/6/2003 2:09 PM
ods2x1	9 KB	SAS System Program	3/5/2003 3:32 PM
...

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Using PROC DOCUMENT

- PROC DOCUMENT Syntax
 - Everything you can do in the DOCUMENTS Window...and more
- When to use PROC DOCUMENT
 - Batch processing of production programs
 - Add additional text ("notes") to output
 - Reorder Objects
 - Replay document objects to multiple destinations

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Using PROC DOCUMENT

- Some general considerations
 - Be prepared to experiment with this new V9 Procedure
 - ODS statements can be used within PROC DOCUMENT
 - Example: Assign a file name and STYLE to a PDF document that PROC DOCUMENT will generate
 - PROC DOCUMENT terminates with the QUIT; statement

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Using PROC DOCUMENT

□ Example

- Run several Procedures against a customer response data set
 - Each PROC has a BY Statement
- Output Objects to a Document
- Use PROC DOCUMENT to re-arrange the Objects

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Using PROC DOCUMENT

```
ods document name=mydoc1(write); ←  
ods noprnt;  
ods proclabel = 'PROC FREQ Output';  
proc freq data=sugi28.predmodel2;  
by territory;  
tables respond*outlet_number/list;  
tables respond*(safety_deposit_box home_owner  
outlet_number)/list;  
title 'Peeking at PROC DOCUMENT';  
title2 'Frequencies Tables by Territory';  
run;
```

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Using PROC DOCUMENT

```
* correlation coefficients;
proc corr data=sugi28.predmodel2;
by territory;
var risk_score;
with checking_balance mortgage_balance
     length_of_residence customer_age
     credit_card_balance;
title2 'Correlations with Risk of Default Score';
run;
```

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Using PROC DOCUMENT

```
proc logistic data=sugi28.predmodel2;
by territory;
model respond = checking_balance mortgage_balance
               length_of_residence customer_age risk_score
               credit_card_balance/selection = stepwise;
title2 'Predictive Model with Stepwise Selection';
run;
ods document close; ←—————

* use display manager command to open ODS document window;
dm 'odsdocuments'; ←—————
```

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Using PROC DOCUMENT

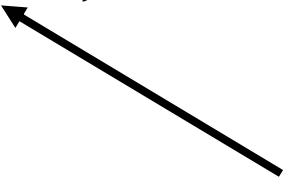
- Now that the Document is available, we will use PROC DOCUMENT commands to
 - Obtain a listing of the Objects in the Document
 - Create separate folders with PROC output by Territory
 - Insert objects in to each Territory's folder
 - View the Results

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Using PROC DOCUMENT

```
title 'What 's in the Document?'  
proc document name=sasclass.mydoc1;  
list/levels=all;  
run;  
quit;
```



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Using PROC DOCUMENT

```
Looking at the Document 12:00 Monday, June 19
Listing of: \Sasclass.Mydoc1\
Order by: Insertion
Number of levels: All
Obs Path
48 \Logistic=1\ByGroup1=1\Step0#1
49 \Logistic=1\ByGroup1=1\Step0#1\Note#1
50 \Logistic=1\ByGroup1=1\Step0#1\ConvergenceStatus#1
51 \Logistic=1\ByGroup1=1\Step0#1\ResidualChiSq#1
52 \Logistic=1\ByGroup1=1\Step1#1
53 \Logistic=1\ByGroup1=1\Step1#1\Note#1
54 \Logistic=1\ByGroup1=1\Step1#1\ConvergenceStatus#1
55 \Logistic=1\ByGroup1=1\Step1#1\FitStatistics#1
56 \Logistic=1\ByGroup1=1\Step1#1\GlobalTests#1
57 \Logistic=1\ByGroup1=1\Step1#1\ResidualChiSq#1
58 \Logistic=1\ByGroup1=1\Step2#1
59 \Logistic=1\ByGroup1=1\Step2#1\Note#1
60 \Logistic=1\ByGroup1=1\Step2#1\ConvergenceStatus#1
61 \Logistic=1\ByGroup1=1\Step2#1\FitStatistics#1
62 \Logistic=1\ByGroup1=1\Step2#1\GlobalTests#1
63 \Logistic=1\ByGroup1=1\Step2#1\ResidualChiSq#1
64 \Logistic=1\ByGroup1=1\Step2#1\Note#2
65 \Logistic=1\ByGroup1=1\ModelBuildingSummary#1
66 \Logistic=1\ByGroup1=1\ParameterEstimates#1
67 \Logistic=1\ByGroup1=1\OddsRatios#1
68 \Logistic=1\ByGroup1=1\Association#1
69 \Logistic=1\ByGroup2#1
70 \Logistic=1\ByGroup2#1\ModelInfo#1
71 \Logistic=1\ByGroup2#1\ResponseProfile#1
72 \Logistic=1\ByGroup2#1\Note#1
73 \Logistic=1\ByGroup2#1\Note#2
74 \Logistic=1\ByGroup2#1\Step0#1
```

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Using PROC DOCUMENT

- Now that we know what's in the document, PROC DOCUMENT syntax can be applied to:
 - Example 1: Re-order output in to new documents
 - Example 2: Replay some of the output to other ODS Destinations

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Using PROC DOCUMENT

* reorganize output to three separate regional documents;
proc document;

```
    doc name=GB(write);  
    copy \sasclass.mydoc1\freq\bygroup1 to freq;  
    copy \sasclass.mydoc1\corr\bygroup1 to corr;  
    copy \sasclass.mydoc1\logistic\bygroup1 to logistic;  
    run;
```

```
    doc name=PNW(write);  
    copy \sasclass.mydoc1\freq\bygroup2 to freq;  
    copy \sasclass.mydoc1\corr\bygroup2 to corr;  
    copy \sasclass.mydoc1\logistic\bygroup2 to logistic;  
    run;
```

```
    doc name=SW(write);  
    copy \sasclass.mydoc1\freq\bygroup3 to freq;  
    copy \sasclass.mydoc1\corr\bygroup3 to corr;  
    copy \sasclass.mydoc1\logistic\bygroup3 to  
logistic;
```

```
    run;
```

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Using PROC DOCUMENT

* take the logistic regression output for the Great Basin Region and output to PDF, CSV and HTML destinations;

```
%let path= C:\reporting classes 2003 ;  
%let output = logistic_analysis;  
ods pdf file = "&path\&output..pdf" style=sasweb;  
ods csvall file = "&path\&output..csv" ;  
ods html file = "&path\&output..xls" style = torn;  
ods listing close;  
proc document name=gb;  
dir \logistic;  
replay;  
run;  
ods pdf close;  
ods csvall close;  
ods html close;  
quit;  
ods listing;
```

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Conclusions

- Document
 - Destination
 - Window
 - Procedure
- New Capabilities
- New Opportunities

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