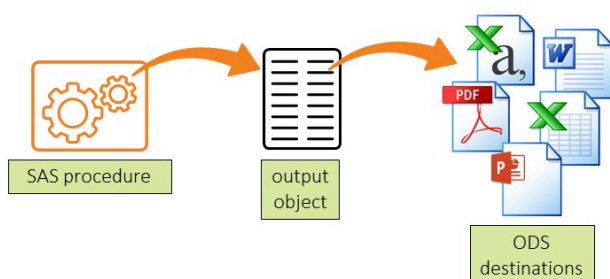


# B6.2 - Exporting Results

## Output Delivery System

Using the SAS Output Delivery System



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SAS

We are programmers, and we want to build programs that can be run frequently and completely unattended. Fear not. SAS has the Output Delivery System (ODS), and it is programmable and flexible, making it simple to automate the entire process of exporting reports to other formats.

In SAS, procedures that generate reports really generate output objects, which can be rendered in one or more output formats designed to be viewed in SAS or in other software packages. In ODS terminology, each of these formats is called a *destination*. Some ODS destinations produce very simple output files, like text files conforming to comma-separated values standards. Others produce complex output files designed to be viewed and manipulated using external software packages. Common destinations of this type include Excel (XLSX), Microsoft Word (RTF), PowerPoint (PPTX), and Adobe (PDF), and there are many other destinations available in SAS.

## Using the SAS Output Delivery System

```
ODS<destination><destination-specifications>;

/* SAS code that produces output */

ODS<destination> CLOSE;
```

You can create different file types by changing the destination in the ODS statement.



SAS

Directing output to these destinations is like making a sandwich. The SAS procedure code that creates the output is the “filling” for our sandwich, and the ODS statements preceding and following the output code is the “bread” that makes the output easy to consume outside of SAS. Let's take a look at how we can create various types of output just by changing the destinations in the ODS statement.

## Exporting Output to a CSV File

CSVALL  
destination

```
ODS CSVALL FILE="filename.csv";
/* SAS code that produces output */
ODS CSVALL CLOSE;
```

```
ods csvall file="&outpath/cars.csv";
proc print data=sashelp.cars noobs;
  var Make Model Type MSRP MPG_City MPG_Highway;
  format MSRP dollar8.;
run;
ods csvall close;
```

SAS

First let's export our report to a CSV file by using the CSVALL destination. You've see that you can use PROC EXPORT to create a CSV file, so how is this different?

## Exporting Output to a CSV File

```
ods csvall file="&outpath/cars.csv";
proc print data=sashelp.cars noobs;
  var Make Model Type MSRP MPG_City MPG_Highway;
  format MSRP dollar8.;
run;
ods csvall close;
```

```
"Make", "Model", "Type", "MSRP", "MPG_City", "MPG_Highway"
"Acura", "MDX", "SUV", "$36,945", 17, 23
"Acura", "RSX Type S 2dr", "Sedan", "$23,820", 24, 31
"Acura", "TSX 4dr", "Sedan", "$26,990", 22, 29
"Acura", "TL 4dr", "Sedan", "$33,195", 20, 28
"Acura", "3.5 RL 4dr", "Sedan", "$43,755", 18, 24
"Acura", "3.5 RL w/Navigation 4dr", "Sedan", "$46,100", 18,
```

Using ODS CSVALL with PROC PRINT enables you to specify the order and format of columns in the CSV file.



SAS

By using ODS CSVALL with PROC PRINT, you can specify the order and format of the columns in your output CSV file.

## Exporting Results to Excel

```
ODSEXCEL FILE="filename.xlsx" STYLE=style  
OPTIONS(SHEET_NAME='label');  
  
/* SAS code that produces output */  
  
ODSEXCEL CLOSE;
```

By default, the results from each procedure are on separate worksheets in the Excel file.



sas

Now let's export our report to that ubiquitous destination: Excel. The ODS EXCEL destination provides an enormous amount of flexibility, so this is a good chance for us to try out a few of the many options that are available.

You can specify a style for the output by using the `STYLE=` option. There are many different styles that are built in to SAS. You can list additional options in the ODS statement by using the `OPTIONS` keyword and enclosing option-value pairs in parentheses. The `SHEET_NAME` option customizes the tab names in the workbook.

## Demo: Exporting Results to Excel

## [6\\_2 - Demo - Exporting Results to Excel.pdf](#)

(<https://clemons.instructure.com/courses/237270/files/23074704/download?wrap=1>) 

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### Activity 6.04:

Open **p106a04.sas** from the **activities** folder and perform the following tasks:

1. Add ODS statements to create an Excel file named **pressure.xlsx** in the **output** folder. Be sure to close the ODS location at the end of the program. Run the program and open the Excel file.

**SAS Studio:** Navigate to the **output** folder in the Files and Folders section of the navigation pane. Select **pressure.xlsx** and click **Download**.

2. Add the **STYLE=ANALYSIS** option in the first ODS EXCEL statement. Run the program again and open the Excel file.

[Click here for Solution.](#)

## ODS to Powerpoint and Word

### Exporting Output to PowerPoint and Microsoft Word

```
ODS POWERPOINT FILE="filename.pptx" STYLE=style;
/* SAS code that produces output */
ODS POWERPOINT CLOSE;
```

```
ODS RTF FILE="filename.rtf" STARTPAGE=NO;
/* SAS code that produces output */
ODS RTF CLOSE;
```

RTF files can be read by word processing software such as Microsoft Word.



SAS

The Output Delivery System also enables us to export reports to common formats that we use in everyday business, such as PowerPoint by using the Powerpoint destination, and Microsoft Word by using the RTF destination. The Rich Text Format (RTF) destination is a software-agnostic file type that's made for word processing programs such as Microsoft Word.

There are particular options that apply to each of these destinations so that you can customize your output.

## Activity 6.05:

Open **p106a05.sas** from the **activities** folder and perform the following tasks:

1. Run the program and open the **pressure.pptx** file.
2. Modify the ODS statements to change the output destination to RTF. Change the style to **sapphire**.
3. Add the STARTPAGE=NO option in the first ODS RTF statement to eliminate a page break between the procedure results.
4. Rerun the program and open the **pressure.rtf** file.

[Click here for Solution.](#)

## ODS to PDF

### Exporting Results to PDF

```
ODS PDF FILE="filename.pdf" STYLE=style  
STARTPAGE=NO PDFTOC=n;  
ODS PROCLABEL "label";  
/* SAS code that produces output */  
ODS PDF CLOSE;
```

The PDF destination has many options for specifying the layout and appearance of your output file.



SAS

Finally, let's take a look at the Portable Document Format (PDF) destination. We use PDF files extensively for reporting because the layout can be precisely controlled, and we can guarantee that the document will look just as we intended it to when the receiver opens it with the appropriate rendering software.

In SAS ODS, PDF is one of the PRINTER destinations, meaning you have a lot of programmatic control over the document's appearance if you want to spend the time to become an expert with ODS PDF. Again, we won't learn about all the options that are available but we will explore a few.

We'll use the PDFTOC= option to control the level of bookmarks that are open. We'll use the ODS PROCLABEL statement to label the bookmark for the procedure. Let's see how all this works together to create a PDF.

## Demo: Exporting Results to PDF

### [6\\_2 - Demo - Exporting Results to PDF.pdf](#)

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