Paper HW-05-2014 SAS[®], Excel[®], and JMP[®] Connectivity

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ABSTRACT

Isn't Microsoft Excel the most used software in the world? Isn't JMP the best in the world for statistical graphics and data discovery? And isn't SAS software the gold standard for robust and reliable analysis? Combine these three with easy connectivity and you have everything you need. Depending on requirements, your (1) input, (2) discovery and analysis, and (3) final display and reporting can begin with any of the three and end with any of the three. We demonstrate the most likely paths that emphasize JMP capabilities. A lively discussion will continue in the hallway!

INTRODUCTION

The importance of Excel has been established in the marketplace. SAS and JMP users learn to bring in and export Excel files easily. Introduced at the 2013 JMP Discovery Summit in San Antonio Texas in September, Version 11 of JMP includes an Excel Wizard under Windows to include titles and formulas.

Similarly, JMP is the best in the world for data statistical discovery using graphics and tables. If you do design of experiments (DOE) you know that JMP leads the way in this scientific technology.

In our presentation, we illustrate file movement with design of experiment and product testing—we then turn to the full SAS package for variable-factor final modeling to further refine final equations and choices. Note that design of experiments and modeling can apply to products, services, or decisions in management.

IMPORTING

Excel files can be easily imported to JMP using JMP's Excel Wizard. It runs under Microsoft Windows.

SAS files are also easy to import to JMP. Just select OPEN under the FILE menu (or from the JMP Starter window) and JMP will recognize the file as a SAS file. Rows and columns will come in the same into the JMP table as they stand in the SAS table.

JMP table-files are likewise easily imported and saved as SAS tables.

Refer to the diagram on the next page as we consider details in order, by the diagram numbers:

1. IMPORTING EXCEL FILES INTO JMP

For Macintosh users, they can drag across the needed rows and columns to copy to the clipboard, and they paste into a JMP table. They then double-click on the column headings and type them in.

For PC/Windows users there is a JMP option to simply open the file using OPEN under FILE and by selecting the Excel file, the Excel Wizard will allow the proper options to be chosen. Display 1 is an example of the Excel Wizard used by JMP.

2. IMPORTING SAS FILES INTO JMP

Under FILE select OPEN and select the SAS file. It will come in since structure is the same. You can equally select OPEN under the JMP Starter window.

3. IMPORTING EXCEL FILES INTO SAS

Under FILE select OPEN and select the Excel file. The Excel Wizard will allow the proper options to be chosen. Columns, rows, column titles, and formulas will come across to the SAS table. See Display 2.

4. IMPORTING JMP FILES INTO SAS

Under FILE select OPEN and select the SAS file. It will come in since structure is the same.



Figure 1. Input, connectivity, and export/output

THE IMPORTANCE OF MODELING

In our example we move an Excel file containing Plackett-Burman specifications for design of experiment into JMP to create alternate design models. Further, we move the results into SAS for further modeling and refining the defining equations.

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An example of the Excel Wizard used by JMP is illustrated in Figure 2, below.

Figure 2. Excel Wizard used by JMP

THE IMPORTANCE OF EASE

We can use the Output Delivery System (ODS) of SAS to easily move the resulting output and/or results to a number of output mediums (destinations), as illustrated in Figure 4. Alternately, we could use the new SAS 9.3 ODS Statistical Graphics to create new graphical images and drill-down applications.

An example of the Excel Wizard used by SAS is illustrated in Figure 3, below.

| SAS Import Wizard Import EXCEL data | What type of data do you wish to import? Standard data source Select a data source from the list below. Microsoft Excel Workbook(*xls *xlsb *xlsm *xlsx) User-defined formats Define a special file format using the External File Interface (EFI) facility. |
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| | Help Cancel < Back Next > Finish |

(continued)

| SAS Import Wizard Select Table | SAS Import: Spreadsheet Options Use data in the first row as SAS variable names. Convert numeric values to characters in a mixed types column. Use the largest text size in a column as SAS variable length. Use DATE. format for a Date/Time column. Use TIME. format if only time values found in a column. The largest text size allowed in a column: 1024 |
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| | <u>H</u> elp <u>Cancel < Back</u> <u>N</u> ext > <u>Finish</u> |



EXPORTING

Excel files can be easily exported from JMP using JMP's Excel Wizard. It runs under Microsoft Windows.

SAS files are also easy to export from JMP. Just select SAVE under the FILE menu (or from the JMP Starter window) and make proper settings. Rows and columns will come in the same into the SAS table as they stand in the JMP table.

JMP table-files are likewise easily exported and saved from SAS tables.



Figure 4. Output Formats / Destinations for SAS users

Refer to the diagram on second page as we consider export details in order, by the diagram numbers:

X1. MOVING JMP INFORMATION TO MICROSOFT RTF/WORD REPORTS

For Macintosh users, they can drag across the needed rows and columns to copy to the clipboard, and they paste into a Microsoft Word table. This can include the column headings and explanations. Alternatively, you can find JMP export under the FILE panel and choose Microsoft Word, for the Word version you need.

For further processing, JMP users can move their information to a SAS file; then for PC/Windows users the SAS ODS features allow you to move your reports to a Word file for merging into your final presentations.

X2. MOVING JMP INFORMATION TO HTML OUTPUT

Similar to Microsoft Word files, PC/Windows users can use SAS ODS features to move information to PowerPoint final presentations.

X3. EXPORTING JMP INFORMATION TO EXCEL FILES

For Macintosh users, they can drag across the needed rows and columns to copy to the clipboard, and they paste into an Excel table. They then double-click on the column headings and type them in.

For PC/Windows users there is a JMP option to export a file using EXPORT under FILE and by selecting Excel Workbook, the JMP output will allow the proper options to be chosen, (*.xlsx or *.xls).

X4. EXPORTING JMP INFORMATION TO PDF OUTPUT

Under FILE select EXPORT for these optional file formats: Text Export File (*.txt); CSV (Comma delimited) (*.csv); TSV (Tab delimited) (*.tsv); SAS Transport File (*.xpt); and dBASE Files (*.dbf, *.ndx, *.mdx).

EXPORTING FROM SAS TO JMP

SAS can easily export data and/or output to JMP. The steps using the SAS Wizard are illustrated in Figures 5 through 12, below.



Figure 5. The Export Data Wizard in SAS

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Figure 6. Specify the Data / Output to Export to JMP

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Figure 7. Select the Type of Data (JMP) to Export

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Figure 8. Specify where to Save JMP Export File

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Figure 9. Save the JMP Export File as Movies.jmp

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Figure 10. Click the "Finish" Button when complete

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Figure 11. View the SAS Log to verify that the Export was successful

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| | | 2 | Casablanca | 103 | Drama | 1942 | MGM / UA | PG | |
| | | 3 | Christmas Vacation | 97 | Comedy | 1989 | Warner Brothers | PG-13 | |
| | | 4 | Coming to America | 116 | Comedy | 1988 | Paramount Pictures | R | |
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| Title | | 6 | Dressed to Kill | 105 | Drama Mysteries | 1980 | Filmways Pictures | R | |
| I ength | | 7 | Forrest Gump | 142 | Drama | 1994 | Paramount Pictures | PG-13 | |
| Category | | 8 | Ghost | 127 | Drama Romance | 1990 | Paramount Pictures | PG-13 | |
| A Year | | 9 | Jaws | 125 | Action Adventure | 1975 | Universal Studios | PG | |
| Studio | | 10 | Jurassic Park | 127 | Action | 1993 | Universal Pictures | PG-13 | |
| Rating | | 11 | Lethal Weapon | 110 | Action Cops & Robber | 1987 | Warner Brothers | R | |
| | | 12 | Michael | 106 | Drama | 1997 | Warner Brothers | PG-13 | |
| | | 13 | National Lampoon's Vacation | 98 | Comedy | 1983 | Warner Brothers | PG-13 | |
| | | 14 | Poltergeist | 115 | Horror | 1982 | MGM / UA | PG | |
| | | 15 | Rocky | 120 | Action Adventure | 1976 | MGM / UA | PG | |
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| abelled | 0 | 21 | The Wizard of Oz | 101 | Adventure | 1939 | MGM / UA | G | |
| | | 22 | Titanic | 194 | Drama Romance | 1997 | Paramount Pictures | PG-13 | |
| | | | | | | | | | |

Figure 12. View the Movies.jmp File

EXPORTING FROM SAS TO EXCEL

Under FILE select SAVE and select the Excel file. The Excel Wizard guides you through the necessary steps choosing the proper options to be selected; columns, rows, column titles; and formulas to be used from the SAS table. The steps using the SAS Wizard are illustrated in Figures 13 through 20, below.



Figure 13. The Export Data Wizard in SAS

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Figure 14. Specify the Data / Output to Export to JMP

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Figure 15. Select the Type of Data (Excel) to Export

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Figure 16. Click "Browse" to tell SAS where to Save the Excel File

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Figure 17. Enter the desired Excel File Name and Click "Save"

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Figure 18. Enter the desired Excel File Name and Click "Next"

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Figure 19. View the SAS Log to verify that the Export was successful

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| 6 | Dracula | 130 Horror 1993 Columbia TriStar | R | | | | |
| 7 | Dressed to Kill | 105 Drama Mysteries 1980 Filmways Pictures | R | | | | |
| 8 | Forrest Gump | 142 Drama 1994 Paramount Pictures | PG-13 | | | | |
| 9 | Ghost | 127 Drama Romance 1990 Paramount Pictures | PG-13 | | | | |
| 10 | Jaws | 125 Action Adventure 1975 Universal Studios | PG | | | | |
| 11 Jurassic Park | | 127 Action 1993 Universal Pictures | PG-13 | | | | |
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| 14 | National Lampoon's Vacation | 98 Comedy 1983 Warner Brothers | PG-13 | | | | |
| 15 | Poltergeist | 115 Horror 1982 MGM / UA | PG | | | | |
| 16 | Rocky | 120 Action Adventure 1976 MGM / UA | PG | | | | |
| 17 | Scarface | 170 Action Cops & Robber 1983 Universal Studios | R | | | | |
| 18 | Silence of the Lambs | 118 Drama Suspense 1991 Orion | R | | | | |
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| 21 | The Terminator | 108 Action Sci-Fi 1984 Live Entertainment | R | | | | |
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Figure 20. View the Movies.xls File

SUMMARY AND CONCLUSION

We have shown the ease with which modern JMP and SAS software moves files, importing and exporting. The Excel Wizard helps with prompts to obtain desired transfer. Since JMP is a product of SAS Institute, swift and effective transfer is not unexpected.

The accompanying PowerPoint presentation for this paper moves an Excel file into JMP for visualization and analytics such as, design of experiments and regression, then the information is moved to SAS for further modeling and display, then output by ODS Statistical Graphics to compare with the JMP output for the initial modeling by JMP.

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ABOUT THE AUTHORS

Charles Edwin Shipp is founder of Consider Consulting Corporation, and has been using SAS and JMP software since 1980. Charlie is credited in the original JMP manual for his roles in the early days. He has written more than two hundred papers, been an invited speaker at more than one hundred SAS and JMP events, and is the recipient of 14 "Best" contributed paper and poster awards. He co-authored four books including Google® Search Complete! (Odyssey Press, 2014) and Quick Results with SAS/GRAPH Software (SAS Press, 1995). He is currently involved as an eBook author, course and iPhone App developer, and member of the sasCommunity.org Advisory Board.

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