IMPORTING DATA
WITH
DDE (Dynamic Data Exchange)
Or Proc Import?

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ABSTRACT

The purpose of this paper is to determine if DDE or Proc Import are better methods of importing data from spreadsheets. We had presented a paper on DDE at a SAS western conference a number of years ago. This paper is somewhat of an update and comparison between DDE and Proc Import. The Arizona Supreme Court, Administrative Office of the Courts (AOC) receives thousands of reports on spreadsheets every year. The monthly statistical reports are summarized by court and published every year in a fiscal year-end publication called the Data Report. The data is also summarized to enable a broad picture of the judiciary in Arizona and used to answer many "what if" questions looking at the future of the judiciary, such as proposed legislation. The process of printing and entering these data into our SAS AF data entry screens can be very tedious and labor intensive. The AOC has saved hundreds of work hours and thousands of dollars by using SAS programs to import data from spreadsheets using DDE and Proc Import.

INTRODUCTION

The Caseflow Management Unit at the AOC invests large amounts of time entering manual data received by the AOC from the courts. This paper explains how DDE (Dynamic Data Exchange) and Proc Import were utilized to import multiple spreadsheets and worksheets into a master SAS database. In this project, the DDE Triplet, has three arguments that were utilized: application name, topic and item. In the current example, the application name is Excel, the topic is the full path of the Excel spreadsheet and the item is the range of rows and columns we wish to import. What made DDE so important to our agency is that the SAS code and testing was completed within a matter of hours. Proc Import requires three arguments; DATAFILE, OUT and DBMS. In our example, DATAFILE is the full path of the excel spreadsheet, OUT is the one or two level SAS database name, and DBMS is the type of import data, which in our example is Excel. The data used for this presentation is an actual monthly statistical report submitted by one of the courts.

THE PROBLEM

In Arizona, 26 Justice Courts in the greater Phoenix area submit monthly statistical reports containing court case activity on Excel spreadsheets. Each workbook contains four worksheets of statistics. Figure1-4 shows an actual example of one of the worksheets submitted by a Justice Court. The worksheet forms make it very difficult and complicated to import the data into the SAS database. One hundred and four (26 courts multiplied by four worksheets) reports are printed and then entered on a screen using SAS/AF to validate the information. This process requires many days of extensive data entry. The current method used to enter the data from the worksheets described above is Dynamic Data Exchange.

The Administrative Office of the Courts has developed new monthly statistical reports that are required by every court to be submitted monthly. The greater Phoenix Justice Courts still submit monthly statistics on spreadsheets but in a different format. All courts are now on one worksheet and it is organized in a rows and columns format without the extensive labels as on the previous forms. Figures 5 shows an example of the new worksheet. The method used to enter the new monthly statistical data will be Proc Import.

JUSTICE OF THE PEACE MONTHLY STATISTICAL REPORT

Court Name: *Agua Fria* Maricopa County *May 2007*

CRIMINAL TRAFFIC

	D.U.I.	Serious Violations*	All Other Violations	TOTAL
Pending First of Month	817	98	2,090	3,005
Filed	52	9	372	433
Transferred In	1	0	0	1
SUBTOTAL	870	107	2,462	3,439
Transferred Out	1	0	0	1
Other Terminations	36	11	458	505
TOTAL TERMINATIONS	37	11	458	506
Statistical Corrections	0	0	0	0
Pending End of Month	833	96	2,004	2,933

* A.R.S. 28-661 (if misdemeanor), -662, -663, -664, -665, -693 and -708. See instructions for details.

TRAFFIC FAILURE TO APPEAR**

Pending First of Month	Filed	Transfers In	SUB-TOTAL	Transfers Out	Other Terminations	TOTAL TERM.	Stat. Corr.	Pending End of Month
648	89	0	737	0	8	8	0	729

** READ: These are FORMAL FTA FILINGS AND DISPOSITIONS CHARGING ANOTHER CRIMINAL OFFENSE, not bench warrants for failure to appear. FTA filings should also have original traffic complaint recorded in the CRIMINAL TRAFFIC SECTION above until that traffic filing has been terminated. Issuing a bench warrant or an FTA does not terminate the traffic filing.

Criminal Traffic FTA Court Trials Held	1	Criminal Traffic FTA Jury Trials Held	0

CIVIL TRAFFIC

Pending First of Month	Filed	Transfers In	SUB-TOTAL	Transfers Out	Other Terminations	TOTAL TERM.	Stat. Corr.	Pending End of Month
2,339	792	0	3,131	0	969	969	0	2,162

VIOLATIONS OF A.R.S. 28-702.01 A&C and 28-702.04B (Part of Civil Traffic Above)

Filed	2	Transfers In	0	TOTAL	2

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Figure 1: Page 1 of Monthly Statistical Report

JUSTICE OF THE PEACE MONTHLY STATISTICAL REPORT

Court Name: *Agua Fria* Maricopa County *May 2007*

Civil Traffic Hearings Held This Month	63

MISDEMEANOR

	Pending First of Month	Filed	Transfers In	SUB-TOTAL	Transfers Out	Other Term.	TOTAL TERM.	Stat. Corr.	Pending End of Month
Misdemeanors (Non-Traffic)	1,912	96	1	2,009	1	69	70	0	1,939
Failure to Appear (Non-Traffic)	231	33	0	264	0	11	11	0	253
TOTAL	**2,143**	129	1	**2,273**	1	80	**81**	0	**2,192**

Misdemeanor FTA Court Trials Held	0	Misdemeanor FTA Jury Trials Held	0

FELONY

Pending First of Month	Filed	Transfers In	SUB-TOTAL	Transfers Out	Other Terminations	TOTAL TERM.	Stat. Corr.	Pending End of Month

Since May 2002, all felony cases in Maricopa County have been filed directly into Superior Court.

Felony Preliminary Hearings Held	*see above*	Felony, Misdemeanor, Criminal Traffic Initial Appearances	

LOCAL NON-CRIMINAL ORDINANCES

	Pending First of Month	Filed	SUBTOTAL	Term.	Stat. Corr.	Pending End of Month
Parking	13	3	16	4	0	12
Non-Parking	0	0	0	0	0	0
TOTAL	13	3	16	4	0	12

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Figure 2: Page 2 of Monthly Statistical Report

JUSTICE OF THE PEACE MONTHLY STATISTICAL REPORT

Court Name: *Agua Fria* Maricopa County *May 2007*

CIVIL COMPLAINTS

	Small Claims	Forcible Detainer	Other Civil	TOTAL
Pending First of Month	889	786	2,796	4,471
Filed	76	221	421	718
Transferred In	0	0	0	0
SUBTOTAL	965	1,007	3,217	5,189
Transferred Out	0	0	0	0
Other Terminations	83	265	270	618
TOTAL TERMINATIONS	83	265	270	618
Statistical Corrections	0	0	0	0
Pending End of Month	882	742	2,947	4,571

Small Claims Hearings Held/Defaults	11	Civil Court Trials Held	11
Small Claims Hearings Held/Defaults before Volunteer Hearing Officer	0	Civil Jury Trials Held	0

DOMESTIC VIOLENCE/HARASSMENT PETITIONS

	Filed	Order Issued	Petition Denied	TOTAL TERMINATED
Domestic Violence	29	29	0	29
Harassment	17	17	0	17

HEARINGS HELD TO REVOKE OR MODIFY ORDER OF PROTECTION/INJUNCTION AGAINST HARASSMENT

Order of Protection	7	Injunction Against Harassment	9

SPECIAL PROCEEDINGS/ACTIVITIES

Peace Bond Complaints Filed	0	Fugitive Complaints Filed	0
Juvenile Hearings Held	0	Search Warrants Issued	0

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Figure 3: Page 3 of Monthly Statistical Report

JUSTICE OF THE PEACE MONTHLY STATISTICAL REPORT

	A	B	C	D	E	F	G	H	I	J	K
1	Court Name:		*Agua Fria*			Maricopa County				*May 2007*	
2											
3	**WARRANTS OUTSTANDING**										
4	**TRAFFIC**								**WARRANTS OUTSTANDINGS**		
5	D.U.I.								316		
6	Serious Violations								26		
7	All Other Violations								1,371		
8	**TRAFFIC TOTAL**								**1,713**		
9											
10	**CRIMINAL**								**WARRANTS OUTSTANDINGS**		
11	Felony										
12	Misdemeanor								1,460		
13	**CRIMINAL TOTAL**								**1,460**		
14											
15											
16	MAIL BY 20th WORKING DAY OF MONTH										
17											
18											
19											
20											
21											
22											
23	Arizona Supreme Court					Signature of the Justice of the Peace (or designee)					
24	Court Programs Unit										
25	1501 W. Washington St., Suite 410										
26	Phoenix, AZ 85007-3327					Name of Preparer					
27											
28	*(602) 542-9376*										
29						Date of Preparation					
30											
31											

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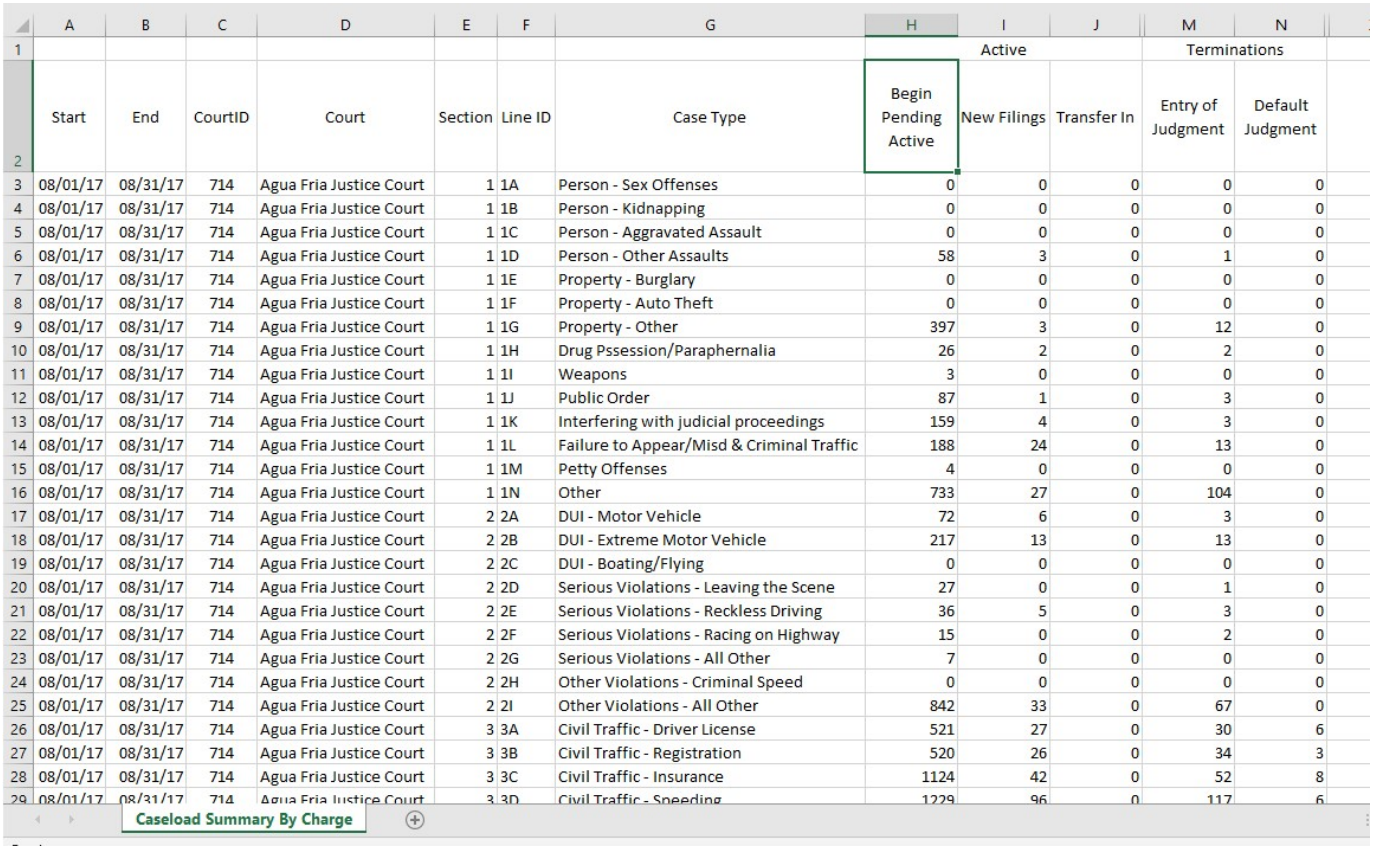
Figure 4: Page 4 of Monthly Statistical Report



	A	B	C	D	E	F	G	H	I	J	M	N
1								Active			Terminations	
2	Start	End	CourtID	Court	Section	Line ID	Case Type	Begin Pending Active	New Filings	Transfer In	Entry of Judgment	Default Judgment
3	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1A	Person - Sex Offenses	0	0	0	0	0
4	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1B	Person - Kidnapping	0	0	0	0	0
5	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1C	Person - Aggravated Assault	0	0	0	0	0
6	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1D	Person - Other Assaults	58	3	0	1	0
7	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1E	Property - Burglary	0	0	0	0	0
8	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1F	Property - Auto Theft	0	0	0	0	0
9	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1G	Property - Other	397	3	0	12	0
10	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1H	Drug Pssession/Paraphernalia	26	2	0	2	0
11	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1I	Weapons	3	0	0	0	0
12	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1J	Public Order	87	1	0	3	0
13	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1K	Interfering with judicial proceedings	159	4	0	3	0
14	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1L	Failure to Appear/Misd & Criminal Traffic	188	24	0	13	0
15	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1M	Petty Offenses	4	0	0	0	0
16	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1N	Other	733	27	0	104	0
17	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2A	DUI - Motor Vehicle	72	6	0	3	0
18	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2B	DUI - Extreme Motor Vehicle	217	13	0	13	0
19	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2C	DUI - Boating/Flying	0	0	0	0	0
20	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2D	Serious Violations - Leaving the Scene	27	0	0	1	0
21	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2E	Serious Violations - Reckless Driving	36	5	0	3	0
22	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2F	Serious Violations - Racing on Highway	15	0	0	2	0
23	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2G	Serious Violations - All Other	7	0	0	0	0
24	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2H	Other Violations - Criminal Speed	0	0	0	0	0
25	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2I	Other Violations - All Other	842	33	0	67	0
26	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3A	Civil Traffic - Driver License	521	27	0	30	6
27	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3B	Civil Traffic - Registration	520	26	0	34	3
28	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3C	Civil Traffic - Insurance	1124	42	0	52	8
29	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3D	Civil Traffic - Speeding	1229	96	0	117	6

Caseload Summary By Charge

Figure 5: New Monthly Statistical Report Spreadsheet

SOLUTIONS:

The current solution is to use DDE triplet to import the four monthly statistical forms for each of the 26 Justice Courts. The general flow and SAS process on how to import the forms from Excel worksheets using DDE triplet is described below. The final result can be found on figure 6 on page 14. The DDE page one output results are displayed using SAS AF screen

The solution is to import the new monthly statistical data for all 26 Justice Courts all at once by using Proc Import. The general flow and SAS process on how to import the Excel worksheet using Proc Import is described starting on page 15. The Proc Import results can be found on figure 7 on page 17. Figure 8 shows the results from Proc Import after the results were modified using SAS Data Set step to modify the variable for more meaningful results.

DDE TRIPLIET SOLUTION: USING DDE TRIPLET TO IMPORT MUTIPLE EXCEL WORKSHEETS

The following is the general flow and SAS sections of how we process the data to import form Excel worksheets using DDE triplet.

STEP BY STEP ON HOW WE USE DDE TO IMPORT THE MONTHLY STATISTICAL REPORTS

Once a month, each Maricopa Justice Court submits monthly statistical reports to the Arizona AOC, Court Services Division, in an Excel spreadsheet. Each spreadsheet has four worksheet forms that are filled in with monthly statistical case activity data. This information is sent by email to AOC which is then copied to a folder named "Maricopa Stats" and grouped by month. For the purposes of this presentation we have selected a sample monthly statistical report. See Figures1-4 above.

IMPORTING PAGE ONE OF THE MONTHLY STATISTICAL REPORT

The first section is the sample code for importing page one of the monthly statistical reports. For page one, I will discuss the SAS code in detail and each step will be discussed. Pages two through four have very similar SAS code and will not be discussed in detail but are included to help illustrate how the complete SAS code works together.
The following is a step by step of how DDE Triplet was used to import multiple Excel spreadsheets and worksheets.

Step 1:

Start by using the X command to open Excel. Excel software must be installed on your computer. The X command "Sleep" is set to one second to give the computer system time to open Excel. Remember to turn the options XWAIT AND XSYNC options off.

NOXWAIT

Specifies that the command processor automatically returns to the SAS session after the specified command is executed. You do not have to type EXIT.

NOXSYNC

Specifies that the operating system command execute asynchronously with your SAS session. That is, control is returned immediately to SAS and the command continues executing without interfering with your SAS session. With NOXSYNC in effect, you can execute an X command or X statement and return to your SAS session without closing the process spawned by the X command or X statement.

Step 2:

DDE triplet arguments are the three external files that SAS will be referring to. The DDE triplet has the following format. "application-name\topic\item".

The **Application name** in this case is Excel. The **Topic** is the full path of where the spreadsheet is located. For the topic, SAS macro was used to enable us to process all 26 courts using the SAS code. In our macro "spname" we used "%bquote" to prevent SAS from dropping the quotes once the macro is resolved. The **Item** in the DDE triplet arguments refers to the worksheet, rows and columns. In our import program the item is worksheet named "page 1" and row 1 column 1 thru row 28 column 28.

Step 3:

Use SAS DATA step method to import data from the page 1 worksheet for the Agua Fria Justice Court. Since we named our filename "sheet", our in file in this case is "sheet".

Step 4:

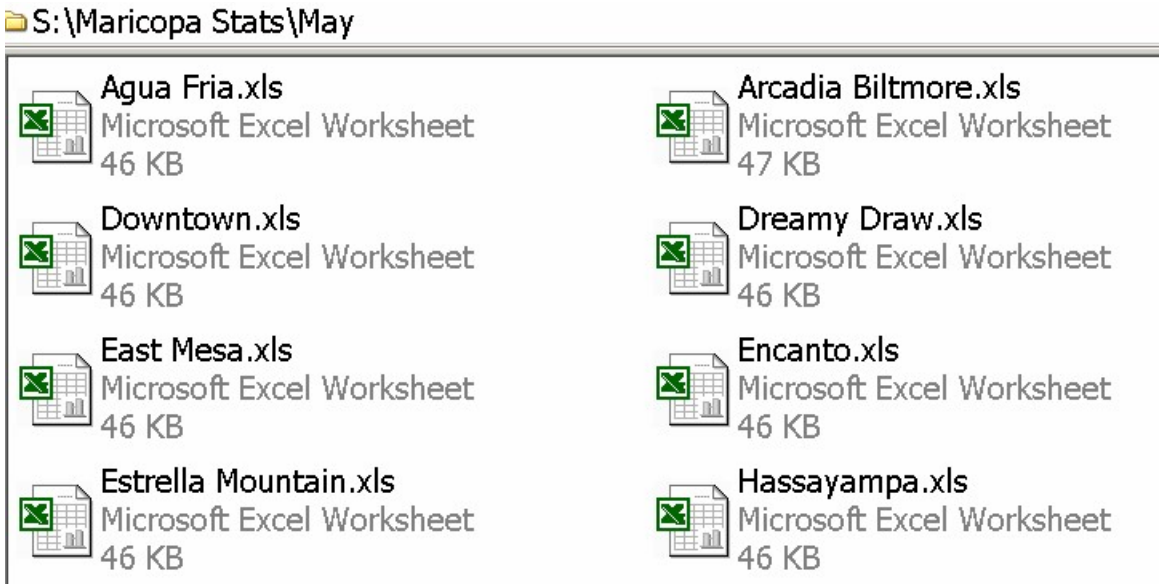
1. Drop the variables not needed from the data set "jppage1".
2. Use the "Retain" statement to capture the figures imported from the worksheet.
3. Set up the character array with eleven elements to store data from worksheet.
4. Set up numeric array with eleven elements to convert character data to numeric data.
5. Input character variables I_data1-I_data11 from worksheet. One variable for each column is imported from the worksheet.
6. Simply set-up a variable called "LN" to count the rows imported from the worksheet. This will help to determine which rows to import data from.
7. Use the Compress SAS statement to remove unwanted characters from your data. In our example we removed ",$-" from each variable. Convert character data to numeric data by applying the input SAS statement.
8. Based on the row imported, move the figures from the input variable to the variable already used in our SAS master database.

Step 5:

Use the Data *_null_* and close Excel and spreadsheet.

Step 6:

Repeat Steps 1-5 to import worksheets named page 2, page 3 and page 4. The page 4 import SAS program will merge pages 1-4 into one data set.



IMPORTING PAGE 1:

```
/*  Maricopa Justice Courts import SAS program */
/*                  PAGE 1                      */
/*  S:\maricopa stats\jpp1.sas                  */
```

Step 1:

```
options NOXWAIT NOXSYNC ;
```

Use noxwait and noxsync.

```
x "start excel";
data _null_ ;
x = SLEEP(1) ;
run;
```

Application Name: Excel

Step 2:

```
/* application-name */
filename mydde DDE 'excel|system' ;

/* Topic            */
```

Topic: S:\maricopa stats\May\Agua Fria.xls

```
%let spname = %bquote("S:\maricopa stats\May\Agua Fria.xls");

/* Item             */
filename sheet DDE "excel|Page 1!r1c1:r28c11" notab;
```

Step 3:

Item: page 1 r1cl:r28c11

```
/* open selected spreadsheet */
data _null_ ;
     file mydde;
put "[OPEN(&spname)]";
run;
```

Step 4:

Drop unwanted variables.

```
/* read excel worksheets using infile "sheet" */
data Jppage1 (drop=I_data1-I_data11 data1-data11 Line_label LN I);
     infile sheet dsd dlm='09'x missover pad lrecl=300 ;
retain
f_dui    f_ser    f_oth
ti_dui   ti_ser   ti_oth
to_dui   to_ser   to_oth
t_dui    t_ser    t_oth
s_dui    s_ser    s_oth
f_ftatr ti_ftatr to_ftatr t_ftatr s_ftatr
ct_trfcr ju_trfcr
f_trfcv ti_trfcv to_trfcv t_trfcv s_trfcv
f_exspd ti_exspd
dj_trfcv
;
array I_data(11) $8.;
array  data(11)  8.  ;
input
I_data1 $
I_data2 $
I_data3 $
I_data4 $
```

Use Retain statement to capture data imported from worksheet.

Numeric and character arrays.

```
I_data7 $
I_data8 $
I_data9 $
I_data10 $
I_data11 $
Line_label $ 1-30;
LN + 1;
courtid = 07&I;
if LN in (6,7,9,10,12,18,21,25,28) then do I=1 to 11;
   I_data{I}=compress(I_data{I},",$-");
   data{I}  = input(I_data{I},8.);
   if data{I}  = . then I_data{I} = 0;
end;
dj_trfcv=0;
if LN=6  then do; f_dui=data4; f_ser=data6; f_oth=data8; end;
if LN=7  then do; ti_dui=data4; ti_ser=data6; ti_oth=data8; end;
if LN=9  then do; to_dui=data4; to_ser=data6; to_oth=data8; end;
if LN=12  then do; s_dui=data4; s_ser=data6; s_oth=data8; end;
if LN=10 then do; t_dui=data4; t_ser=data6; t_oth=data8; end;
if LN=18 then do; f_ftatr=data3; ti_ftatr=data4; to_ftatr=data6;
t_ftatr=data7; s_ftatr=data9; end;
if LN=21 then do; ct_trfcr=data5; ju_trfcr=data11; end;
if LN=25 then do; f_trfcv=data3; ti_trfcv=data4; to_trfcv=data6;
t_trfcv=data7; s_trfcv=data9; end;
if LN=28 then do; f_exspd=data3; ti_exspd=data7; output; end;
```

Remove unwanted character using the Compress function. Convert Character values to numeric using the Input functions.

Move imported data to SAS master database variables.

Step 5:

```
/*close selected spreadsheet */
data _null_ ;
     file mydde;
     put "[CLOSE()]" ;
     put "[QUIT()]" ;
run ;
```

Close and Excel and Spreadsheet.

IMPORTING PAGE 2:

```
/*  Maricopa Justice Courts import SAS program */
/*                  PAGE 2                     */
/*  S:\maricopa stats\jpp2.sas                 */


x "start excel";
data _null_ ;
x = SLEEP(1) ;
run;

filename mydde DDE 'excel|system' ;
filename sheet DDE "excel|Page 2!r1c1:r23c11" notab;

%let spname = %bquote("S:\maricopa stats\ May\Agua Fria.xls");

data _null_ ;
     file mydde;
put "[OPEN(&spname)]";
run;

data Jppage2 (drop=I_data1-I_data11 data1-data11 Line_label LN I);
infile sheet dsd dlm='09'x missover pad lrecl=300 ;
```

```
retain
ct_hear
f_misnt ti_misnt to_misnt t_misnt s_misnt
f_ftant ti_ftant to_ftant t_ftant s_ftant
ct_ntcr jur_ntcr
f_park t_park s_park
f_npark t_npark s_npark
f_fel
ti_fel
to_fel
t_fel
s_fel
hear_fel
ia_fel
;
array I_data(11) $8.;
array  data(11)  8.  ;
input
I_data1 $
I_data2 $
I_data3 $
I_data4 $
I_data5 $
I_data6 $
I_data7 $
I_data8 $
I_data9 $
I_data10 $
I_data11 $
Line_label $ 1-30;
LN + 1;
courtid = 07&I;
if LN in (3,7,8,11,21,22) then do I=1 to 11;
   I_data{I}=compress(I_data{I},",$-");
   data{I}  = input(I_data{I},8.);
   if data{I}  = . then I_data{I} = 0;
end;
f_fel = 0;
ti_fel = 0;
to_fel = 0;
t_fel = 0;
s_fel = 0;
hear_fel = 0;
ia_fel = 0;
if LN=3  then do; ct_hear=data5; end;
if LN=7  then do; f_misnt=data4; ti_misnt=data5; to_misnt=data7;
t_misnt=data8; s_misnt=data10; end;
if LN=8  then do; f_ftant=data4; ti_ftant=data5; to_ftant=data7;
t_ftant=data8; s_ftant=data10; end;
if LN=11 then do; ct_ntcr=data5; jur_ntcr=data11; end;
if LN=21 then do; f_park=data5; t_park=data8; s_park=data9; end;
if LN=22 then do; f_npark=data5; t_npark=data8; s_npark=data9; output; end;

data _null_ ;
     file mydde;
     put "[CLOSE()]" ;
     put "[QUIT()]" ;
run ;
```

IMPORTING PAGE 3:

```
/*  Maricopa Justice Courts import SAS program */
/*                  PAGE 3                     */
/*  S:\maricopa stats\jpp3.sas                 */


x "start excel";
data _null_ ;
x = SLEEP(1) ;
run;

filename mydde DDE 'excel|system' ;
filename sheet DDE "excel|Page 3!r1c1:r28c11" notab;

%let spname = %bquote("S:\maricopa stats\ May\Agua Fria.xls");

data _null_ ;
     file mydde;
put "[OPEN(&spname)]";
run;
data Jppage3 (drop=I_data1-I_data11 data1-data11 Line_label LN I);
infile sheet dsd dlm='09'x missover pad lrecl=300 ;
retain
 f_sc  f_fd  f_civ
ti_sc ti_fd ti_civ
to_sc to_fd to_civ
 t_sc  t_fd  t_civ
 s_sc  s_fd  s_civ
totsctrl court_cv
offsctrl jury_cv
f_dv  iss_dv  den_dv
f_har iss_har den_har
held_dv held_har
f_pb     f_fug
hear_juv iss_sw
;
array I_data(11) $8.;
array  data(11)  8.  ;
input
I_data1 $
I_data2 $
I_data3 $
I_data4 $
I_data5 $
I_data6 $
I_data7 $
I_data8 $
I_data9 $
I_data10 $
I_data11 $
Line_label $ 1-30;
LN + 1;
courtid = 07&I;
if LN in (6,7,9,10,12,15,16,20,21,24,27,28) then do I=1 to 11;
   I_data{I}=compress(I_data{I},",$-");
   data{I}  = input(I_data{I},8.);
   if data{I}  = . then I_data{I} = 0;
end;
if LN=6 then do; f_sc=data4;  f_fd=data6;  f_civ=data8; end; if
LN=7 then do; ti_sc=data4; ti_fd=data6; ti_civ=data8; end; if
LN=9 then do; to_sc=data4; to_fd=data6; to_civ=data8; end; if
LN=10 then do; t_sc=data4; t_fd=data6;  t_civ=data8; end; if
LN=12 then do; s_sc=data4; s_fd=data6; s_civ=data8; end;
```

```
if LN=15 then do; totsctrl=data5; court_cv=data11; end;
if LN=16 then do; offsctrl=data5; jury_cv=data11; end;
if LN=20 then do; f_dv=data4; iss_dv=data6; den_dv=data8; end;
if LN=21 then do; f_har=data4; iss_har=data6; den_har=data8; end;
if LN=24 then do; held_dv=data5; held_har=data11; end;
if LN=27 then do; f_pb=data5; f_fug=data11; end;
if LN=28 then do; hear_juv=data5; iss_sw=data11; output; end;

data _null_ ;
     file mydde;
     put "[CLOSE()]" ;
     put "[QUIT()]" ;
run ;
```

IMPORTING PAGE 4:

```
/*  Maricopa Justice Courts import SAS program */
/*                  PAGE 4                     */
/*  S:\maricopa stats\jpp4.sas                 */


x "start excel";
data _null_ ;
x = SLEEP(1) ;
run;

filename mydde DDE 'excel|system' ;
filename sheet DDE "excel|Page 4!r1c1:r23c11" notab;

%let spname = %bquote("S:\maricopa stats\ May\Agua Fria.xls");

data _null_ ;
     file mydde;
put "[OPEN(&spname)]";
run;

data Jppage4 (drop=I_data1-I_data11 data1-data11 Line_label LN I);
infile sheet dsd dlm='09'x missover pad lrecl=300 ;
retain
o_duiw
o_serw
o_othw
o_felw
o_misw
;
array I_data(11) $8.;
array  data(11)  8.  ;
input
I_data1 $
I_data2 $
I_data3 $
I_data4 $
I_data5 $
I_data6 $
I_data7 $
I_data8 $
I_data9 $
I_data10 $
I_data11 $
Line_label $ 1-30;
```

```
LN + 1;
courtid = 07&I;
user = &user;
date = &recdate;
if LN in (5,6,7,11,12) then do I=1 to 11;
   I_data{I}=compress(I_data{I},",$-");
   data{I}  = input(I_data{I},8.);
   if data{I} =. then I_data{I} = 0;
end;
if LN=5 then do; o_duiw=data7; end;
if LN=6 then do; o_serw=data7; end;
if LN=7 then do; o_othw=data7; end;
if LN=11 then do; o_felw=data7; if o_felw = . then o_felw = 0; end;
if LN=12 then do; o_misw=data7; output; end;


data _null_ ;
     file mydde;
     put "[CLOSE()]" ;
     put "[QUIT()]" ;
run ;

DATA JPcrt07;
     MERGE Jppage1 Jppage2 Jppage3 Jppage4;
BY  courtid;
run;
```

```
Command ===>
                JUSTICE OF THE PEACE MONTHLY STATISTICS  DATE REC'D 061007
                 COUNTY  7 COURT 14 MONTH  5 YEAR 20  7  ESTIMATE A  USER HC
..............................CRIMINAL TRAFFIC..............................
                                DUI        SERIOUS     ALL OTHER       TOTAL
PENDING 1ST OF MONTH            817           98          2090          3005
FILED                            52            9           372           433
TRANSFERRED IN                    1            0             0             1
SUBTOTAL                        870          107          2462          3439
TRANSFERRED OUT                   1            0             0             1
OTHER TERMINATIONS               36           11           458           505
TOTAL TERMINATIONS               37           11           458           506
STATISTICAL CORRECTION            0            0             0             0
PENDING END OF MONTH            833           96          2004          2933

.........................TRAFFIC FAILURE TO APPEAR.........................
PEND 1ST  FILED   TRANS    SUB     TRANS   OTHER    TOTAL   STAT    PEND END
OF MONTH          IN     TOTAL     OUT    TERM     TERM    CORR    OF MONTH
     648      89       0      737       0       8       8       0       729
CRIM TRAFFIC/FTA COURT TRIALS       1   CRIM TRAFFIC/FTA JURY TRIALS       0

..............................CIVIL TRAFFIC...............................
PEND 1ST  FILED  TRANS   SUB   TRANS  DEFALT  OTHER  TOTAL   STAT   PEND END
OF MONTH         IN    TOTAL   OUT   JUDGMT  TERMS  TERM    CORR   OF MONTH
    2339    792      0    3131      0       0    969     969       0    2162

..................VIOLATIONS OF ARS 28-702.01 AND 28-702.04..................
```

Figure 6: DDE page one output results displayed using SAS AF screen

PROC IMPORT SOLUTION: USING PROC IMPORT TO IMPORT EXCEL WORKSHEET

The following is the general flow and SAS sections of how we process the data to import form Excel worksheets using DDE triplet.

STEP BY STEP ON HOW WE USE DDE TO IMPORT THE MONTHLY STATISTICAL REPORTS

Once a month, each Maricopa Justice Court submits monthly statistical reports to the Arizona AOC, Court Services Division, in an Excel spreadsheet. Each spreadsheet has four worksheet forms that are filled in with monthly statistical case activity data. This information is sent by email to AOC which is then copied to a folder named "Maricopa Stats" and grouped by month. For the purposes of this presentation we have selected a sample monthly statistical report. See Figures1-4 above.

IMPORTING NEW MONTHLY STATISTICAL REPORT

The first section is the sample code for importing new monthly statistical report using Proc Import. I will discuss the SAS code in detail and data step used. Sample of new monthly statistical report can be found under figure 5.

The following is a step by step of how Proc Import was used to import the new monthly statistical report Excel worksheet.

Step 1:

Proc import has three argument requirements; DATAFILE, Out, and DBMS.

DATAFILE

Proc Import required that you specify the complete path of the spreadsheet you intend to import.

OUT

Specify the SAS Data where you want Proc Import to output the results. You can specify one level or two level output name. if you specify one level Proc Import will out to the work folder and data will not be stored for later use.

DBMS

DBMS stands for "Database Management Systems".

Proc Import required that you specify the type of data you intend to import. In our example we are importing an excel worksheet which is a "xlsx" type. Note that you must have a license for SAS/ACCESS interface to PC Files to import to a DBMS table.

REPLACE

It important that you use the REPLACE option because Proc Import will not overwrite an existing data set.

Step 2:

In our Proc Import example we used three import procedures; getnames, datarow and sheet.

GETNAMES

GETNAMES specifies that import procedure generate SAS variables based on the first rows of data. In our example we set GETNAMES to "no" because we wanted to replace all variable names.

DATAROW

DATAROW is used in combination with GETNAMES. If GETNAMES is set to "no" than DATAROW must be greater than one. In our example we set GETNAMES to

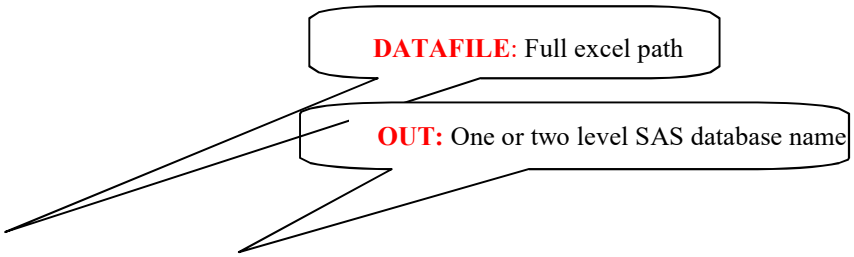
"no" and DATAROW to "3".

SHEET

SHEET is the name of the excel spreadsheet worksheet. In our example the name of the worksheet is "Caseload Summary By Charge".

Step 3:

1. Use the "Attrib" statement to format the new variables length and labels for each variable.
2. Set each new variable equal to the letter variable outputted by Proc Import.
3. Drop the variables not needed from the data set "outputdata".




```
PROC IMPORT DATAFILE = "S:\Maricopa Stats\FY2018\MCJCMonthlyStatsAugust2017.xlsx"
            DBMS=xlsx OUT=importfilings replace;
   Getnames = no;
   Datarow  = 3;
   Sheet="Caseload Summary By Charge";
RUN;
```

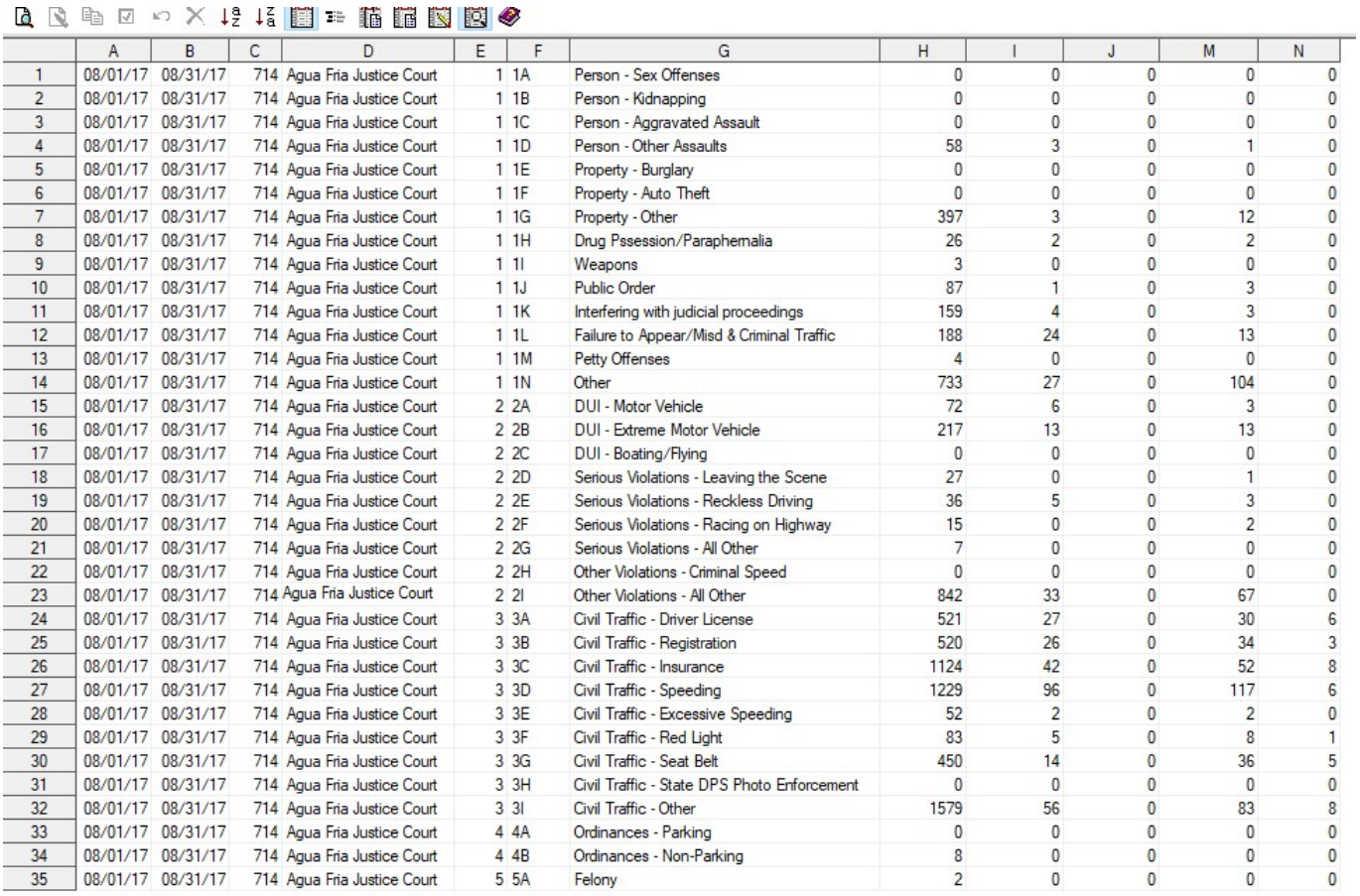
DBMS: xlsx

```
data OUTPUTDATA (DROP= A B C D E F G H I J K L M N O P Q R S T U V W);
      set importfilings;
attrib
      Report_Begin_Date length=$10 label='First Date of Report'
      Report_end_Date  length=$10 label='Last Date of Report'
      Court_Number length=4. label='Court Number'
      County_Name length=$25  label='Court Name'
      Section length=4. label='Section'
      Line_Id length=$2 label='Line ID Number'
      Case_Type length=$50  label='Case Type'
      Begin_Pending_Active length=8. label='Begin Pending Active'
      New_Filings          length=8. label='New_Filings'
      TransferIn           length=8. label='TransferIn'
      Entry_of_Judgment    length=8. label='Entry_of_Judgment'
      Default_Judgment     length=8. label='Default_Judgment';
 ;
```

Start of Data Set Step

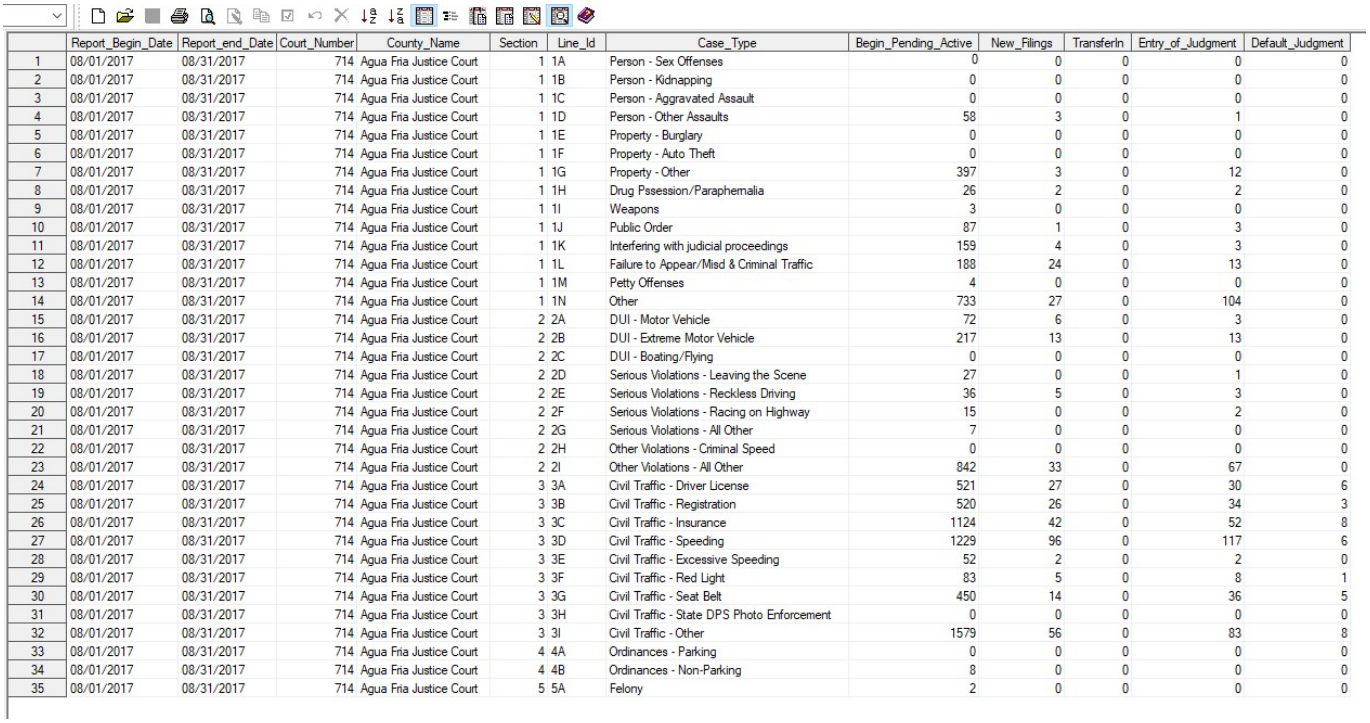
```
Report_Begin_Date = PUT(A,mmddyy10.);
Report_End_Date   = PUT(B,mmddyy10.);
Court_Number = C;
County_Name  = D;
Section      = E;
line_Id      = F;
Case_Type    = G;
Begin_Pending_Active = H;
New_Filings          = I;
TransferIn           = J;
```

```
Entry_of_Judgment     = M;
Default_Judgment      = N;
if court_number = 714;
run;
```



	A	B	C	D	E	F	G	H	I	J	M	N
1	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1A	Person - Sex Offenses	0	0	0	0	0
2	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1B	Person - Kidnapping	0	0	0	0	0
3	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1C	Person - Aggravated Assault	0	0	0	0	0
4	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1D	Person - Other Assaults	58	3	0	1	0
5	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1E	Property - Burglary	0	0	0	0	0
6	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1F	Property - Auto Theft	0	0	0	0	0
7	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1G	Property - Other	397	3	0	12	0
8	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1H	Drug Pssession/Paraphernalia	26	2	0	2	0
9	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1I	Weapons	3	0	0	0	0
10	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1J	Public Order	87	1	0	3	0
11	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1K	Interfering with judicial proceedings	159	4	0	3	0
12	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1L	Failure to Appear/Misd & Criminal Traffic	188	24	0	13	0
13	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1M	Petty Offenses	4	0	0	0	0
14	08/01/17	08/31/17	714	Agua Fria Justice Court	1	1N	Other	733	27	0	104	0
15	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2A	DUI - Motor Vehicle	72	6	0	3	0
16	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2B	DUI - Extreme Motor Vehicle	217	13	0	13	0
17	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2C	DUI - Boating/Flying	0	0	0	0	0
18	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2D	Serious Violations - Leaving the Scene	27	0	0	1	0
19	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2E	Serious Violations - Reckless Driving	36	5	0	3	0
20	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2F	Serious Violations - Racing on Highway	15	0	0	2	0
21	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2G	Serious Violations - All Other	7	0	0	0	0
22	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2H	Other Violations - Criminal Speed	0	0	0	0	0
23	08/01/17	08/31/17	714	Agua Fria Justice Court	2	2I	Other Violations - All Other	842	33	0	67	0
24	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3A	Civil Traffic - Driver License	521	27	0	30	6
25	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3B	Civil Traffic - Registration	520	26	0	34	3
26	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3C	Civil Traffic - Insurance	1124	42	0	52	8
27	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3D	Civil Traffic - Speeding	1229	96	0	117	6
28	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3E	Civil Traffic - Excessive Speeding	52	2	0	2	0
29	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3F	Civil Traffic - Red Light	83	5	0	8	1
30	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3G	Civil Traffic - Seat Belt	450	14	0	36	5
31	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3H	Civil Traffic - State DPS Photo Enforcement	0	0	0	0	0
32	08/01/17	08/31/17	714	Agua Fria Justice Court	3	3I	Civil Traffic - Other	1579	56	0	83	8
33	08/01/17	08/31/17	714	Agua Fria Justice Court	4	4A	Ordinances - Parking	0	0	0	0	0
34	08/01/17	08/31/17	714	Agua Fria Justice Court	4	4B	Ordinances - Non-Parking	8	0	0	0	0
35	08/01/17	08/31/17	714	Agua Fria Justice Court	5	5A	Felony	2	0	0	0	0

Figure 7: Proc Import output from New Monthly Statistical Report Spreadsheet



	Report_Begin_Date	Report_end_Date	Court_Number	County_Name	Section	Line_Id	Case_Type	Begin_Pending_Active	New_Filings	TransferIn	Entry_of_Judgment	Default_Judgment
1	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1A	Person - Sex Offenses	0	0	0	0	0
2	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1B	Person - Kidnapping	0	0	0	0	0
3	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1C	Person - Aggravated Assault	0	0	0	0	0
4	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1D	Person - Other Assaults	58	3	0	1	0
5	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1E	Property - Burglary	0	0	0	0	0
6	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1F	Property - Auto Theft	0	0	0	0	0
7	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1G	Property - Other	397	3	0	12	0
8	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1H	Drug Psession/Paraphernalia	26	2	0	2	0
9	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1I	Weapons	3	0	0	0	0
10	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1J	Public Order	87	1	0	3	0
11	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1K	Interfering with judicial proceedings	159	4	0	3	0
12	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1L	Failure to Appear/Misd & Criminal Traffic	188	24	0	13	0
13	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1M	Petty Offenses	4	0	0	0	0
14	08/01/2017	08/31/2017	714	Agua Fria Justice Court	1	1N	Other	733	27	0	104	0
15	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2A	DUI - Motor Vehicle	72	6	0	3	0
16	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2B	DUI - Extreme Motor Vehicle	217	13	0	13	0
17	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2C	DUI - Boating/Flying	0	0	0	0	0
18	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2D	Serious Violations - Leaving the Scene	27	0	0	1	0
19	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2E	Serious Violations - Reckless Driving	36	5	0	3	0
20	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2F	Serious Violations - Racing on Highway	15	0	0	2	0
21	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2G	Serious Violations - All Other	7	0	0	0	0
22	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2H	Other Violations - Criminal Speed	0	0	0	0	0
23	08/01/2017	08/31/2017	714	Agua Fria Justice Court	2	2I	Other Violations - All Other	842	33	0	67	0
24	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3A	Civil Traffic - Driver License	521	27	0	30	6
25	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3B	Civil Traffic - Registration	520	26	0	34	3
26	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3C	Civil Traffic - Insurance	1124	42	0	52	8
27	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3D	Civil Traffic - Speeding	1229	96	0	117	6
28	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3E	Civil Traffic - Excessive Speeding	52	2	0	2	0
29	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3F	Civil Traffic - Red Light	83	5	0	8	1
30	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3G	Civil Traffic - Seat Belt	450	14	0	36	5
31	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3H	Civil Traffic - State DPS Photo Enforcement	0	0	0	0	0
32	08/01/2017	08/31/2017	714	Agua Fria Justice Court	3	3I	Civil Traffic - Other	1579	56	0	83	8
33	08/01/2017	08/31/2017	714	Agua Fria Justice Court	4	4A	Ordinances - Parking	0	0	0	0	0
34	08/01/2017	08/31/2017	714	Agua Fria Justice Court	4	4B	Ordinances - Non-Parking	8	0	0	0	0
35	08/01/2017	08/31/2017	714	Agua Fria Justice Court	5	5A	Felony	2	0	0	0	0

Figure 8: Results of Proc Import output modified with Data Set step with new SAS variables

CONCLUSION

Using DDE triplet (Dynamic Data Exchange) in combination with other SAS tools, such as SAS/AF and base SAS 9.4, Excel worksheets were able to be imported in a matter of minutes. DDE is most useful when the spreadsheets are in form format. Using Proc Import to import excel spreadsheets is most useful when the spreadsheets have rows and columns of raw data without a lot of formatting. The return on investment was great because the SAS code was completed in a matter of hours. Our research assistant can now work on other priority projects instead of spending several days entering data. These processing improvements will help the Arizona Supreme Court, Administrative Office of the Court accomplish its strategic goals.

The Maricopa Justice Court data is later aggregated and published along with the other courts in the following website: http://www.supreme.state.az.us/stats/

REFERENCES

SAS online document V9.13
SAS Institute Inc. 2004. **SAS OnlineDoc® 9.1.3**. Cary, NC: SAS Institute Inc.

IMPROVING DATA ENTRY by 70% Importing Multiple Excel Worksheets Using DDE (Dynamic Data Exchange)
By Humberto Cisneros and Carrin Huff, Phoenix, AZ
http://old.wuss.org/Proceedings13/72_Paper.pdf

Make the Invisible Visible: A Case Study of Importing Multiple Worksheet Files
By Zizhong Fan, Westat, Rockville, MD
Proceedings/**sugi31**/paper034-31.pdf

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