

Pretty SAS® Output*Quick and Dirty Doesn't  
Have to be Big and Ugly*

University of Iowa SAS User Group  
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**“Table 1”**

**Table 1: Important Characteristics of the  
Population I'm Studying**

Characteristic		n	Mean/%
Patient age	Mean	845	27.2
Patient age group	<=18 years	35	4.1%
	19-64 years	810	95.9%
Patient sex	Male	61	24.1%
	Female	192	75.9%
Median income	1 - 40,999	95	11.3%
	41,000 - 50,999	572	68.1%
	51,000 - 66,999	172	20.5%
	67,000+	1	0.0%
Race	White	743	97.0%
	Non-white	23	3.0%

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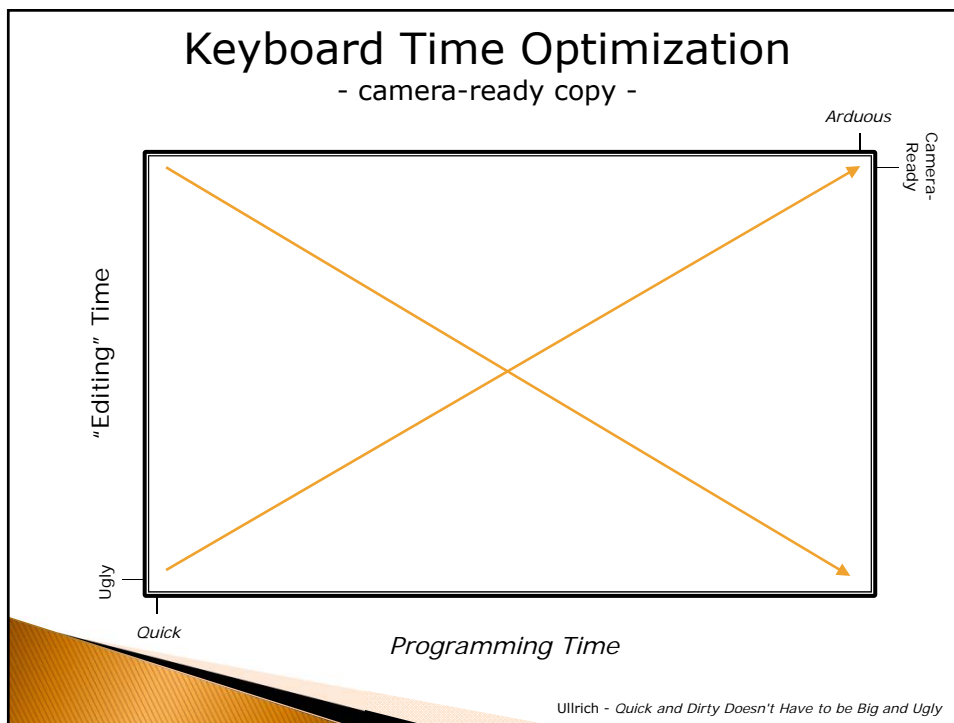
The { Programmer  
Analyst  
Researcher  
Statistician  
Data Wrangler } : between the horns  
of a dilemma

Quickly write simple code  
-and-  
Spend a couple of minutes hours transcribing results?

-or-

Spend a lot of time writing "complex" code  
-and-  
Spend little time (if any) cleaning up camera-ready copy

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## The Setting:

- ▶ Data extracts from clinical data system.
  - “Mystery data”
  - Repeated extracts
  - Modestly large dataset (82 variables)
  - Multi-member research team
  
- ▶ Need to get a “first feel” for what is in the data.

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## The Output:

#	Variable	Label	# Resp	# Missing	Summary output	Count
1	Pt_ID	Patient identification	248,335	0	Unique resp: 116221	
					Max. appear: 449	
					Min. appear: 1	
2	FACILITY	Facility	248,335	0	Unique resp: 24	
					Max. appear: 54685	
					Min. appear: 124	
3	Age	Patient age	247,200	1,135	Min: 0	
					Max: 90	
4	SEX	Patient sex	247,155	1,180	F	130697
					M	116442
					U	16
5	ADM_Date	Admission date (mo/yr)	248,335	0	Min: 04/01/2007	
					Max: 06/01/2012	

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## Program Steps

- ▶ “Setup” the data
- ▶ Build “task-specific” macros
  - perfunctory analysis
  - creates dataset with summary data lines
- ▶ Call the appropriate macros
  - accumulate the outputs
- ▶ Cleanup the outputs
- ▶ Report

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## Program Steps – “Setup”

- ▶ Demonstration data – sashelp.cars
  - 428 observations
  - 15 variables
    - Categorical variables
      - Text
      - Numeric
    - Continuous variables

<u>Obs</u>	<u>Make</u>	<u>Model</u>	<u>Type</u>	<u>Cylinds</u>	<u>MSRP</u>	<u>Weight</u>
1	Acura	MDX	SUV	6	\$36,945	4451
2	Acura	RSX Type S 2dr	Sedan	4	\$23,820	2778
8	Audi	A4 1.8T 4dr	Sedan	4	\$25,940	3252
9	Audi	A4 1.8T convert. 2dr	Sedan	4	\$35,940	3638
29	BMW	325i 4dr	Sedan	6	\$28,495	3219
30	BMW	325Ci 2dr	Sedan	6	\$30,795	3197
64	Chevrolet	Suburban 1500 LT	SUV	8	\$42,735	4947
65	Chevrolet	Tahoe LT	SUV	8	\$41,465	5050

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## Program Steps – Task Specific Macros

Numbers	Few Categories	Many Categories
Valid responses	Valid responses	Valid responses
Missing responses	Missing responses	Missing responses
Minimum value	Specific response value	# of unique responses
Maximum value	Frequency	Count of most frequent response
		Count of least frequent response
<code>%nums macro</code>	<code>%fewcats macro</code>	<code>%manycats macro</code>

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## Program Steps – Task Specific Macros

```

%macro fewcats ( dsn , var , lbl );
ods listing close;
ods output onewayfreqs=ot1;
proc freq data=&dsn;
tables &var / missing;
run;
ods listing;

data work1(keep=vname n_resp nmiss outs ct lbl);
set ot1 end=eof;
length lbl $ 40;
lbl="&lbl";
retain nmiss n_resp;
length vname $ 30 outs $ 40;
vname=substr(table,7);
if _n_ = 1 then do;
n_resp=frequency/(percent/100);
if missing(&var) then n_resp=n_resp-frequency;
end;
if missing(&var) then nmiss=frequency;
else do;
outs=&var;
ct=frequency;
output;
end;
run;

proc append base=keeper data=work1;
run;
%mend;

```

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## Program Steps – Task Specific Macros

### The macro call:

```
%fewcats ( demo , origin , Continent of origin );
```

### Resulting dataset:

Obs	lbl	nmiss	n_resp	vname	outs	ct
1	Continent of origin		428	Origin	Asia	158
2	Continent of origin		428	Origin	Europe	123
3	Continent of origin		428	Origin	USA	147

### Appended to “keeper” dataset

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## Call the macros

### Accumulate the outputs

```
proc datasets;
  delete keeper;
quit;

%fewcats ( demo , origin , Continent of origin );
%fewcats ( demo , make , Automobile manufacturer );
%manycats ( demo , model , Model name );
%fewcats ( demo , type , Body type );
%nums ( demo , msrp , dollar8. , MSRP );
%nums ( demo , weight , best12. , GVW );
```

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## Final Steps

- ▶ Data step to add an “order” variable
- ▶ PROC REPORT output
  - ODS RTF destination

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## Final Steps PROC REPORT

```
proc report data=keeperx nowd;  
  column count vname lbl n_resp nmiss outs ct;  
  define count / order;  
  define vname / order;  
  define lbl / order;  
  define n_resp / order;  
  define nmiss / order;  
  compute after vname;  
    line ' ';  
  endcomp;  
  format outs $40. n_resp nmiss comma10. ;  
  label  
    count='#'  
    vname='Variable'  
    lbl='Label'  
    n_resp='# Resp'  
    nmiss='# Missing'  
    outs='Summary output'  
    ct='Count';  
  title 'Quick and Dirty Demo Report';  
run;
```

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## Final Output

#	Variable	Label	# Resp	# Missing	Summary output	Count
1	Origin	Continent of origin	428	0	Asia	158
					Europe	123
					USA	147
2	make	Automobile manufacturer	428	0	Unique resp:	38
					Max. appear:	28
					Min. appear:	1
3	model	Model name	428	0	Unique resp:	425
					Max. appear:	2
					Min. appear:	1
4	Type	Body type	428	0	Hybrid	3
					SUV	60
					Sedan	262
					Sports	49
					Truck	24
					Wagon	30
5	MSRP	MSRP	428	0	Min: \$10,280	
					Max: \$192,465	
6	Weight	GVW	428	0	Min: 1850	
					Max: 7190	

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## Questions?

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