

A Random Selection Program for Employee Survey Purposes

Thomas J. Winn, Jr.

**Audit Division Headquarters, Office of the Comptroller of Public Accounts
Austin, Texas**

Introduction

It is important for managers to take the time to visit with and listen to employees who work under their administration. Unfortunately, because of time constraints on all employees, and distance between work locations, this opportunity does not occur normally as often as would be desirable. Two executives with the Office of the Comptroller of Public Accounts have instituted programs in which several employees from agency divisions under their administration are randomly selected at regular intervals for special gatherings to discuss agency issues and employee concerns, and also to share ideas for improving agency operations. These interactions have been facilitated by the implementation of a SAS program which selects employees at random, without replacement, and which produces a report for executive use which contains key information for each employee selected.

Programming Details

A large number of employees of the Comptroller's Office are accustomed to using the agency's mainframe computer in batch mode. ROSCOE is used to build, edit and store programs and data in card image format, and to submit batch jobs to the MVS/ESA operating system for execution. ROSCOE has an associated language, called RPF, which enables a programmer to develop panel-driven applications. The panels are used for data-entry as well as for displaying text in a dialog with users of the application.

In the case of the Employee Selection System, the executive/user responds to the RPF-generated promptings by answering questions. The executive's replies are used as inputs to a SAS program which is executed in batch mode, and which produces a report for use by the executive. (This is operationally similar to SAS/AF and Screen Control Language.) Each time the system is used, or attempted to be used, a message is sent to the developer's personal log.

Here is a macro which is used to determine the number of observations in a SAS data set (this is used a couple of times in the random employee selection program):

```
%MACRO NUMOBS(DSN);
  %GLOBAL NUM;
  DATA _NULL_;
    IF 0 THEN SET &DSN POINT=_N_ NOBS=COUNT;
    CALL SYMPUT('NUM',LEFT(PUT(COUNT,8.)));
  STOP;
RUN;
%MEND NUMOBS;
```

What follows are the essential lines of code in the random employee selection program. **EMPS** is a SAS dataset which contains personnel information for all current employees; it is sorted by social security number. **SAMPSIZ** is a user-supplied parameter for the desired number of employees to be selected. **SAMPOUT.CHOSEN** is a permanent SAS dataset which contains the social security numbers and selection dates for all employees ever selected by the system -- it grows each time the system is used.

```
**** DETERMINE THE TOTAL NUMBER OF EMPLOYEES *****,
%NUMOBS(EMPS)
%PUT THERE ARE &NUM EMPLOYEES (TOTAL);

*****,
**** CONSTRUCT THE SAMPLE FRAME (EMPLOYEES ELIGIBLE FOR SAMPLING) *****,
*****,

**** READ THE DATASET OF PREVIOUSLY-CHOSEN EMPLOYEES *****,
DATA BEFORE;
  SET SAMPOUT.CHOSEN;
  BY SSN;

**** DETERMINE THE NUMBER OF PREVIOUSLY-CHOSEN EMPLOYEES *****,
%NUMOBS(BEFORE)
%PUT THERE ARE &NUM PREVIOUSLY-CHOSEN EMPLOYEES.;

**** EXCLUDE THE PREVIOUSLY-CHOSEN EMPLOYEES FROM CONSIDERATION *****,
DATA EMPS;
  MERGE EMPS(IN=D) BEFORE(IN=E);
  BY SSN;
  IF D AND NOT E;
  DROP CHOOZDAT;

**** DETERMINE THE NUMBER OF EMPLOYEES ELIGIBLE FOR SAMPLING *****,
%NUMOBS(EMPS)
%PUT THERE ARE &NUM EMPLOYEES ELIGIBLE FOR SAMPLING.;
```

```

*****;
**** DEFINE A MACRO TO CONSTRUCT THE SAMPLE AND TO PRINT THE REPORT ***;
*****;

%MACRO DECIDE(SAMPSIZ);
    %IF (&SAMPSIZ > 0) AND (&SAMPSIZ LE &NUM) %THEN %CHOOZ;
    %ELSE %PUT &SAMPSIZ IS AN INVALID SELECTION.;
%MEND DECIDE;

%MACRO CHOOZ;
    %**** CONSTRUCT THE SAMPLE *****;
    DATA SAMPL (DROP=I);
        DO I= 1 TO &SAMPSIZ;
            PTR=(INT(RANUNI(0)*&NUM)+1);
            SET EMPS POINT=PTR;
                LABEL CHOOZDAT = "DATE CHOSEN";
                CHOOZDAT = "&SYSDATE";
            OUTPUT;
        END;
    STOP;
    RUN;
    %**** PRINT THE REPORT *****;
    PROC PRINT LABEL DATA=SAMPL;
        VAR NAME PHONE JTITLE NEWTTL TYPE HIRED;
        FORMAT PHONE FONFMT. TYPE $TYPFMT. HIRED WORDDATE18.;
        TITLE1 "TEXAS COMPTROLLER OF PUBLIC ACCOUNTS";
        TITLE2 ;
        TITLE3 "&SAMPSIZ EMPLOYEES CHOSEN AT RANDOM";
        TITLE4 "ON &SYSDATE FOR SURVEY PURPOSES" ;
    PROC PRINT LABEL DATA=SAMPL(DROP=CHOOZDAT POSTAT DIV NEWTTL);
        FORMAT TYPE $TYPFMT. OVRTIM $OVTFMT. RACE $RACFMT.
        SEX $SEXFMT. SSN SSNFMT. PHONE FONFMT.
        LMERIT LRCLASS LPEVAL HIRED DATE7.;
        TITLE1 "TEXAS COMPTROLLER OF PUBLIC ACCOUNTS";
        TITLE2 ;
        TITLE3 "&SAMPSIZ EMPLOYEES CHOSEN AT RANDOM";
        TITLE4 "ON &SYSDATE FOR SURVEY PURPOSES" ;
    %**** REVISE THE DATASET OF PREVIOUSLY-CHOSEN EMPLOYEES *****;
    DATA NEWB4;
        SET BEFORE SAMPL(KEEP=SSN CHOOZDAT);
    PROC SORT DATA=NEWB4 OUT=SAMPOUT.CHOSEN;
        BY SSN;
    PROC PRINT LABEL DATA=SAMPOUT.CHOSEN;
        FORMAT SSN SSNFMT.;
        TITLE1 "TEXAS COMPTROLLER OF PUBLIC ACCOUNTS";
        TITLE2 ;
        TITLE3 "EMPLOYEES CHOSEN AT RANDOM";
        TITLE4 "FOR SURVEY PURPOSES, AS OF &SYSDATE" ;
%MEND CHOOZ;

```

```

*****;
**** INVOKE THE MACRO FOR THE DESIRED NUMBER OF EMPLOYEES *****;
*****;
%DECIDE(ZZZZ)

```

It should be noted that there is an RPF program which substitutes the value of the desired number of employees for ZZZZ in the above macro invocation.

A User's View of the System

Here are a few of the panels which are used in a dialog with the user:

- (1) This panel is used to screen users. Only authorized persons have access to sensitive personnel information.

```

*----- EMPLOYEES RANDOM SELECTION SYSTEM -----*

```

```

Please enter the Employee Sampling System password.
====>

```

- (2) This panel provides an explanation of the system, and notifies the user of what to expect concerning the name and destination of the printed output.

```

*----- EMPLOYEES RANDOM SELECTION SYSTEM -----*

```

```

This procedure generates a printed listing of a desired number of
Comptroller employees. It is intended to be used for survey purposes
by Executive Administration. The employees are selected at random
without replacement, so that no employee will be selected on more
than one execution of the procedure.

```

```

The report prints on printer VTAMPD9B, as output from job UEXECSAM.
If you have any questions or problems, contact Tom Winn at 463-4907.

```

```

To generate an employee list for sampling, please type "GO" and
then press the "ENTER"-key. To exit the procedure, type "STOP"
and then press the "ENTER"-key.

```

```

====>

```

- (3) This panel gets the datum needed for the SAS program.

```
*----- EMPLOYEES RANDOM SELECTION SYSTEM -----*
```

```
Please enter the desired number of employees to be selected.  
(Note: entry must be an integer greater than zero.)
```

```
====>
```

- (4) This is what the user sees when the user-supplied number of employees to be selected is accepted.

```
> SUB05 (JOB07251) UEXECSAM SUBMITTED AT 08.08.02 <U5.ESAMP3EX 000005>  
>  
.....1.....2.....3.....4.....5.....6.....7.....8  
HAVE A GOOD DAY!  
TYPE "OFF" AND PRESS YOUR "ENTER" KEY TO SIGN OFF.
```

The user never sees the SAS program, or the RPF programs which are linked to the panels. The SAS Log will include messages generated by the %PUT-statements:

```
%PUT THERE ARE &NUM EMPLOYEES (TOTAL);  
%PUT THERE ARE &NUM PREVIOUSLY-CHOSEN EMPLOYEES.;  
%PUT THERE ARE &NUM EMPLOYEES ELIGIBLE FOR SAMPLING.;
```