**Program 18.2** SAS Code for Wilcoxon Rank Sum Test

%macro WilcoxonRankSumTest( delta=, /\* Standardized effect size \*/

r1 = , /\* prevalance of group 1 \*/

r2 = , /\* prevalance of group 2 \*/

sides=, /\* number of test sides: 1 or 2 \*/

alpha=, /\* alpha \*/

power= /\* power \*/

);

proc iml;

start CDFPDFDELTA(t);

m=t+&delta; c=cdf('normal',m,0,1); p=pdf('normal',t,0,1); v=c\*p; return(v);

finish;

start CDF2PDFDELTA(t);

m=t+&delta; c=cdf('normal',m,0,1)\*\*2; p=pdf('normal',t,0,1); v=c\*p; return(v);

finish;

start CDFPDF\_DELTA(t);

m=t-&delta; c=cdf('normal',m,0,1); p=pdf('normal',t,0,1); v=c\*p; return(v);

finish;

start CDF2PDF\_DELTA(t);

m=t-&delta; c=cdf('normal',m,0,1)\*\*2; p=pdf('normal',t,0,1); v=c\*p; return(v);

finish;

start s1(t);

m=t+&delta; c=cdf('normal',m,0,1); p=pdf('normal',t,0,1); v=c\*p; return(v);

finish;

interval = .M || .P;

call quad(nu1,"CDFPDFDELTA", interval);

call quad(s1, "CDF2PDFDELTA", interval);

call quad(nu2,"CDFPDF\_DELTA", interval);

call quad(s2, "CDF2PDF\_DELTA", interval);

sigma1 = s1-nu1\*\*2; sigma2 = s2-nu2\*\*2;

p1=1-&alpha/&sides; z\_alpha = probit(p1);

p2=&power; z\_beta = probit(p2);

n = (1/(12\*&r1\*&r2))\*((z\_alpha+z\_beta\*sqrt(12\*(&r2\*sigma1+&r1\*sigma2)))/(nu1-0.5))\*\*2;

delta=&delta;r1 =&r1; r2=&r2;sides =&sides;alpha=&alpha;power=&power;

print 'Sample Size';

print 'Wilcoxon Rank Sum Test for Mean Difference';

print delta r1 r2 sides alpha power;

print n;

quit;

run;

%mend WilcoxonRankSumTest;