```sas
* CORRECT CONFIDENCE INTERVALS;
        %macro robust(outest=a, out=_last_, id=id, df=);

        proc sort data=&out;
          by &id;
        run;
        proc means data=&out noprint;
          by &id;
          var &df;
          output out=_out1_(keep=&df) sum=&df;
        run;
        data _out1_;
        set;
        array d (*) &df;
        if d(1)=. then delete;
        run;

        data _reduce_;
          set &outest;
          array abc(*)  _character_;
          length name $8;
          call vname(abc(1),name);
          if name ne '_LINK_' and _type_ eq 'COV' then delete;
          drop  _lnlike_;
        run;

        proc iml;
          use _reduce_ where (_type_='COV');
          read all into cov;
          use _reduce_ where (_type_='PARMS');
          read all into b[colname=vname];
          if ncol(cov)=0 then se=1;
          else se=sqrt(diag(cov));
          use _out1_;
          read all into x;
          x=x*se;
          v=x`*x;
          se=sqrt(vecdiag(v));
          wald=(b`/se)##2;
          p=1-probchi(wald,1);
          chi=wald||p;
          c={"Chi Square" "p-value"};
          reset noname fuzz=.000001;
          print, "Robust Variance Matrix",,
              v[colname=vname rowname=vname];
          print, "Standard Errors",, se[rowname=vname];
          print, "Wald Statistics",, chi[rowname=vname colname=c];
        quit;
        run;

        %mend robust;

proc logistic descending data = eight outest=a covout;
model alldem = finish_age sex class1_dichot /
risklimits;
output out=b dfbetas=dint dfinish_age dsex dclass1_dichot;
run;
```

```
%robust(outest=a, out=b, id=pairid, df=dint dfinish_age dsex
       dclass1_dichot )      */

* must type in the beta (called Parameter Estimate) and corrected StdErr from
the previous output;
    *or=exp(estimate);
    *low_or=exp(estimate-1.96*stderr);
    *hi_or=exp(estimate+1.96*stderr);

data weight;
input idno  $ parm stderr;
    or=exp(parm);
    low_or=exp(parm-1.96*stderr);
    hi_or=exp(parm+1.96*stderr);
    cards;
    1              0.9496           0.3771563

;

Run;


        proc print data=weight;
         title 'corrected odds ratios and 95% confidence intervals';
         var parm stderr or low_or hi_or;
        format or low_or hi_or 6.3;
Run;
```