(4) DATA REPORTING

```
*** SUMMARY STATS;

        * Proc Freq;

                proc freq data=<dataset> noprint;
                    tables <var1>*<var2> / out=<data_freq>;

        * Proc Means;

                proc means data=<dataset> noprint nway chartype;
                    var <var1> <var2> ...;
                    class <class_var1> <class_var2> ...;
                    output out=<data_mean>
                        n=<n_var1> <n_var2> ...
                        min=<min_var1> <min_var2> ...
                        max=<max_var1> <max_var2>
                        mean=<mean_var1> <mean_var2> ...
                        std=<std_var1> <std_var2>
                        sum=<sum_var1> <sum_var2> ...
                        range=<range_var1> <range_var2>
                        nmiss=<nmiss_var1> <nmiss_var2>
                        p10=<p10_var1> <p10_var2>
                        median=<median_var1> <median_var2>
                        q3=<q3_var1> <q3_var2>
                            / autoname;

        * Data Accumulation (n, min, max, mean, sum);

                data <dataset_cum>;
                    set <dataset>;
                    retain <all_cum> 0;
                    <all_cum>=sum(<all_cum>,<var>);
                    by <group>;
                    if first.<group> then <group_cum>=0;
                    <group_cum>+<var>;
                    if last.<group>;

*** GRAPHING;

        * Vertical Bar Chart (1D);

                goptions cback=white;
                title '<title>';
                proc gchart data=teams;
                    vbar b2008 / levels=8 range
                        patternid=midpoint
                        autoref;
                    format b2008 3.;
                    label b2008='Bats in 2008';
                run;
                quit;

        * Vertical Bar Chart (2D);

                goptions cback=white;
                title '<title>';
                proc gchart data=teams;
                    vbar team / sumvar=b2008
                        type=mean
                        patternid=midpoint
                        mean
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```
                    autoref;
                format b2008 3.;
                label b2008='Bats in 2008' team='Team Names';
            run;
            quit;

    * Vertical Bar Chart (3D+);

            goptions cback=white;
            title '<title>';
            proc gchart data=teams;
                vbar position / group=team sumvar=b2008
                    type=mean
                    patternid=midpoint
                    mean
                    autoref;
                format b2008 3.;
                label b2008='Bats in 2008' team='Team Names' position='Player
Position';
            run;
            quit;

    * Vertical Bar Chart (3D-);

            goptions cback=white;
            title '<title>';
            proc gchart data=teams;
                vbar position / subgroup=name sumvar=b2008
                    type=sum
                    mean
                    autoref;
                format b2008 3.;
                label b2008='Bats in 2008' position='Player Position' name='Player
Names';
            run;
            quit;

    * Vertical Bar Chart (4D);

            goptions cback=white;
            title '<title>';
            proc gchart data=teams;
                vbar position / group=team subgroup=name sumvar=b2008
                    type=mean
                    mean
                    autoref;
                format b2008 3.;
                label b2008='Bats in 2008' team='Team Names' position='Player
Position' name='Player Names';
            run;
            quit;

    * Horizontal Bar (e.g. 1D);

            goptions cback=white;
            title '<title>';
            proc gchart data=teams;
                hbar b2008 / levels=8 range nostats
                    patternid=midpoint
                    autoref;
                format b2008 3.;
                label b2008='Bats in 2008';
            run;
            quit;
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        * Plot (2D);

                proc sort data=teams out=plot_teams;
                    by draft_date;
                goptions cback=white;
                title '<title>';
                proc gplot data=plot_teams;
                    plot b2008*draft_date b2009*draft_date / overlay vref=50
haxis='01JAN2013'd to '31DEC2013'd by 30.33333333;
                    symbol1 v=dot i=join cv=red ci=red;
                    symbol2 v=triangle i=join cv=green ci=green;
                    format b2008 3. draft_date mmddyy10.;
                    label b2008='Bats in 2008' draft_date='Draft Date';
                run;
                quit;
```