

```
1 /* Subject characteristics - descriptive statistics and caregiver group comparisons */
2 data table1;
3   retain SubjectID care;
4   set bb.masterdata;
5   keep SubjectID care age bmi gender race1 education Income Employment Parent Formula
5 ! BMIClass;
6   run;
```

NOTE: There were 636 observations read from the data set BB.MASTERDATA.

NOTE: The data set WORK.TABLE1 has 636 observations and 12 variables.

NOTE: DATA statement used (Total process time):

```
real time      0.00 seconds
cpu time       0.00 seconds
```

```
7   proc sort data=table1 nodupkey;
8     by SubjectID care age bmi gender race1 education Income Employment Parent Formula
8 ! BMIClass;
9     run;
```

NOTE: There were 636 observations read from the data set WORK.TABLE1.

NOTE: 583 observations with duplicate key values were deleted.

NOTE: The data set WORK.TABLE1 has 53 observations and 12 variables.

NOTE: PROCEDURE SORT used (Total process time):

```
real time      0.01 seconds
cpu time       0.01 seconds
```

```
10  proc means data=table1 median min max; /* median reported due to skewed data */
11    var age;
12    run;
```

NOTE: There were 53 observations read from the data set WORK.TABLE1.

NOTE: PROCEDURE MEANS used (Total process time):

```
real time      0.10 seconds
cpu time       0.01 seconds
```

```
13  proc means data=table1 median min max; /* medians reported due to skewed data */
14    class care;
15    var age bmi;
16    run;
```

NOTE: There were 53 observations read from the data set WORK.TABLE1.

NOTE: PROCEDURE MEANS used (Total process time):

```
real time      0.08 seconds
cpu time       0.01 seconds
```

```
17  proc npar1way data=table1 wilcoxon; /* Wilcoxon Rank-Sum test (non-parametric) used due to
17 ! skewed data */
18    class care;
19    var age bmi;
20    run;
```

NOTE: There were 53 observations read from the data set WORK.TABLE1.

NOTE: PROCEDURE NPAR1WAY used (Total process time):

```
real time      0.71 seconds
cpu time       0.17 seconds
```

```
21  proc freq data=table1; /* Fisher's exact test used for tables with low expected cell
21 ! counts */
22    table care*(Gender Race1 Education Income Employment Parent Formula BMIClass) / chisq
22 ! fisher;
23    run;
```

NOTE: There were 53 observations read from the data set WORK.TABLE1.

NOTE: PROCEDURE FREQ used (Total process time):

```
real time      0.20 seconds
cpu time       0.10 seconds
```

```
24
25
26 /*****
27 /*****
28 /*** Analysis of all study participants ***/
29 /*****
30 /*****
31
32 /* Mean and SD of measured intake across all trials and bottle sizes */
33 proc means data=bb.masterdata mean stddev;
34   var kcal_rfpm kcal_dwf;
35   run;
```

```
NOTE: There were 636 observations read from the data set BB.MASTERDATA.
NOTE: PROCEDURE MEANS used (Total process time):
real time      0.11 seconds
cpu time       0.01 seconds
```

```
36
37 /* Mean and SD of measured intake across all trials by bottle size */
38 proc means data=bb.masterdata mean stddev;
39   class oz;
40   var kcal_rfpm kcal_dwf;
41   run;
```

```
NOTE: There were 636 observations read from the data set BB.MASTERDATA.
NOTE: PROCEDURE MEANS used (Total process time):
real time      0.18 seconds
cpu time       0.15 seconds
```

```
42
43 /* Mean difference in measured intake between RFPM and direct weights */
44 proc sort data=bb.masterdata;
45   by subjectid oz trial;
46   run;
```

```
NOTE: There were 636 observations read from the data set BB.MASTERDATA.
NOTE: The data set BB.MASTERDATA has 636 observations and 33 variables.
NOTE: PROCEDURE SORT used (Total process time):
real time      0.01 seconds
cpu time       0.01 seconds
```

```
47 proc mixed data=bb.masterdata;
48   class SubjectID Trial oz indx;
49   model Diff_kcal = indx oz / noint outp=res;
50   repeated oz trial / subject=subjectid type=un@ar(1);
51   lsmeans indx oz / cl alpha=.1;
52   run;
```

```
NOTE: Convergence criteria met.
NOTE: The data set WORK.RES has 636 observations and 40 variables.
NOTE: PROCEDURE MIXED used (Total process time):
real time      0.51 seconds
cpu time       0.37 seconds
```

```
53   quit;
54
55 /* Mean percent difference in measured formula intake (dry powder) between RFPM and direct
56 ! weights */
56 proc sort data=bb.masterdata;
57   by subjectid oz trial;
```

```
58 run;
```

NOTE: Input data set is already sorted, no sorting done.

NOTE: PROCEDURE SORT used (Total process time):

```
real time      0.00 seconds
cpu time       0.01 seconds
```

```
59 proc mixed data=bb.masterdata;
60   class SubjectID Trial oz indx;
61   model PercentDiff_Dry = indx oz / noint outp=res;
62   repeated oz trial / subject=subjectid type=un@cs;
63   lsmeans indx oz / cl alpha=.1;
64   ods output lsmeans=ls1;
65   run;
```

NOTE: Convergence criteria met.

NOTE: The data set WORK.LS1 has 5 observations and 11 variables.

NOTE: The data set WORK.RES has 636 observations and 40 variables.

NOTE: PROCEDURE MIXED used (Total process time):

```
real time      0.56 seconds
cpu time       0.32 seconds
```

```
66 quit;
```

```
67
```

```
68 /* Testing equivalence of measured formula intake (dry powder) by RFPM and direct weights
```

```
68 ! */
```

```
69 %let nulls=5*7.5*10;
```

```
70 %let label=5*7_5*10;
```

```
71 %macro equivt; /* Macro to assess equivalence within 5, 7.5, and 10% margin of error using
```

```
71 ! LS means from mixed model */
```

```
72 %do i=1 %to 3;
```

```
73   t1=(estimate+%scan(&nulls,&i,*)/stderr;
```

```
74   t2=(estimate-%scan(&nulls,&i,*)/stderr;
```

```
75   p1=1-probt(t1,df);
```

```
76   p2=probt(t2,df);
```

```
77   if p1>p2 then pval%scan(&label,&i,*)=round(p1,.0001);
```

```
78   else pval%scan(&label,&i,*)=round(p2,.0001);
```

```
79 %end;
```

```
80 %mend;
```

```
81 data tost;
```

```
82   set ls1;
```

```
83   %equivt;
```

```
84   keep Effect oz estimate stderr lower upper pval5 pval7_5 pval10;
```

```
85   run;
```

NOTE: There were 5 observations read from the data set WORK.LS1.

NOTE: The data set WORK.TOST has 5 observations and 9 variables.

NOTE: DATA statement used (Total process time):

```
real time      0.04 seconds
cpu time       0.00 seconds
```

```
86 proc print data=tost noobs;
```

```
87   run;
```

NOTE: There were 5 observations read from the data set WORK.TOST.

NOTE: PROCEDURE PRINT used (Total process time):

```
real time      0.12 seconds
cpu time       0.00 seconds
```

```
88
```

```
89 /* Testing equivalence of measured formula intake (liquid) by RFPM and direct weights */
```

```
90 data l1;
```

```
91   set bb.masterdata;
```

```
92   Diff_liquid=Liquid_Con_RFPM-Liquid_Con_DWF;
```

```
93   PercentDiff_liquid=100*(Liquid_Con_RFPM-Liquid_Con_DWF)/Liquid_Con_DWF;
```

```
94 run;
```

```
NOTE: There were 636 observations read from the data set BB.MASTERDATA.  
NOTE: The data set WORK.L1 has 636 observations and 35 variables.  
NOTE: DATA statement used (Total process time):  
      real time          0.02 seconds  
      cpu time           0.03 seconds
```

```
95 proc sort data=l1;  
96   by subjectid oz trial;  
97   run;
```

```
NOTE: There were 636 observations read from the data set WORK.L1.  
NOTE: The data set WORK.L1 has 636 observations and 35 variables.  
NOTE: PROCEDURE SORT used (Total process time):  
      real time          0.01 seconds  
      cpu time           0.00 seconds
```

```
98 proc mixed data=l1;  
99   class SubjectID Trial oz indx;  
100  model PercentDiff_Liquid = indx oz / noint outp=res;  
101  repeated oz trial / subject=subjectid type=un@cs;  
102  lsmeans indx oz / cl alpha=.1;  
103  ods output lsmeans=ls2;  
104  run;
```

```
NOTE: Convergence criteria met.  
NOTE: The data set WORK.LS2 has 5 observations and 11 variables.  
NOTE: The data set WORK.RES has 636 observations and 42 variables.  
NOTE: PROCEDURE MIXED used (Total process time):  
      real time          0.58 seconds  
      cpu time           0.32 seconds
```

```
105 quit;  
106 data tost_liquid;  
107   set ls2;  
108   %equivt;  
109   keep Effect oz estimate stderr lower upper pval5 pval7_5 pval10;  
110   run;
```

```
NOTE: There were 5 observations read from the data set WORK.LS2.  
NOTE: The data set WORK.TOST_LIQUID has 5 observations and 9 variables.  
NOTE: DATA statement used (Total process time):  
      real time          0.01 seconds  
      cpu time           0.01 seconds
```

```
111 proc print data=tost_liquid noobs;  
112   run;
```

```
NOTE: There were 5 observations read from the data set WORK.TOST_LIQUID.  
NOTE: PROCEDURE PRINT used (Total process time):  
      real time          0.07 seconds  
      cpu time           0.01 seconds
```

```
113  
114 /* Linear regression models to test for proportional bias (Bland-Altman) */  
115 data ba;  
116   set bb.masterdata;  
117   avg_kcal=mean(kcal_rfpm,kcal_dwf);  
118   run;
```

```
NOTE: There were 636 observations read from the data set BB.MASTERDATA.  
NOTE: The data set WORK.BA has 636 observations and 34 variables.  
NOTE: DATA statement used (Total process time):
```

```
real time      0.02 seconds
cpu time       0.01 seconds
```

```
119 proc reg data=ba;
120   model diff_kcal=avg_kcal;
121   run;

122   quit;
```

```
NOTE: PROCEDURE REG used (Total process time):
real time      1.42 seconds
cpu time       0.53 seconds
```

```
123 proc sort data=ba;
124   by oz;
125   run;
```

```
NOTE: There were 636 observations read from the data set WORK.BA.
NOTE: The data set WORK.BA has 636 observations and 34 variables.
NOTE: PROCEDURE SORT used (Total process time):
real time      0.01 seconds
cpu time       0.00 seconds
```

```
126 proc reg data=ba;
127   by oz;
128   model diff_kcal=avg_kcal;
129   run;
```

```
NOTE: Interactivity disabled with BY processing.
NOTE: PROCEDURE REG used (Total process time):
real time      5.16 seconds
cpu time       1.20 seconds
```

```
130   quit;
131
132   /* Reliability of RFPM across trials */
133   /* Equality of differences between measured intake by RFPM and direct weights at each of
133! the three trials */
134   proc sort data=bb.masterdata out=r1;
135     by SubjectID oz Trial;
136     run;
```

```
NOTE: Input data set is already sorted; it has been copied to the output data set.
NOTE: There were 636 observations read from the data set BB.MASTERDATA.
NOTE: The data set WORK.R1 has 636 observations and 33 variables.
NOTE: PROCEDURE SORT used (Total process time):
real time      0.02 seconds
cpu time       0.01 seconds
```

```
137 proc mixed data=r1;
138   class SubjectID Trial oz;
139   model PercentDiff_kcal = trial*oz / noint;
140   repeated oz trial / subject=subjectid type=un@cs;
141   contrast '2oz' trial*oz 1 0 0 0 -1 0 0 0 0 0 0 0,
142             trial*oz 1 0 0 0 0 0 0 0 -1 0 0 0;
143   contrast '4oz' trial*oz 0 1 0 0 0 -1 0 0 0 0 0 0,
144             trial*oz 0 1 0 0 0 0 0 0 0 -1 0 0;
145   contrast '6oz' trial*oz 0 0 1 0 0 0 -1 0 0 0 0 0,
146             trial*oz 0 0 1 0 0 0 0 0 0 0 -1 0;
147   contrast '8oz' trial*oz 0 0 0 1 0 0 0 -1 0 0 0 0,
148             trial*oz 0 0 0 1 0 0 0 0 0 0 0 -1;
149   contrast 'all' trial*oz 1 1 1 1 -1 -1 -1 -1 0 0 0 0,
150             trial*oz 1 1 1 1 0 0 0 0 -1 -1 -1 -1;
151   run;
```

NOTE: Convergence criteria met.
NOTE: PROCEDURE MIXED used (Total process time):
real time 0.66 seconds
cpu time 0.28 seconds

```
152 quit;  
153  
154  
155 /*****  
156 /*****  
157 /*** Analysis of caregiver subgroups ***/  
158 /*****  
159 /*****  
160  
161 /* Mean percent difference in measured formula intake between RFPM and direct weights */  
162 /* Caregiver subgroup analysis */  
163 proc sort data=bb.masterdata;  
164 by care subjectid oz trial;  
165 run;
```

NOTE: There were 636 observations read from the data set BB.MASTERDATA.
NOTE: The data set BB.MASTERDATA has 636 observations and 33 variables.
NOTE: PROCEDURE SORT used (Total process time):
real time 0.01 seconds
cpu time 0.01 seconds

```
166 proc mixed data=bb.masterdata;  
167 by care;  
168 class SubjectID Trial oz indx;  
169 model PercentDiff_Dry = indx oz / noint outp=res;  
170 repeated oz trial / subject=subjectid type=un@cs;  
171 lsmeans indx oz / cl alpha=.1;  
172 ods output lsmeans=ls3;  
173 run;
```

NOTE: Convergence criteria met.
NOTE: The above message was for the following BY group:
Care=Caregiver
NOTE: Convergence criteria met.
NOTE: The above message was for the following BY group:
Care=Non-Caregiver
NOTE: The data set WORK.LS3 has 10 observations and 12 variables.
NOTE: The data set WORK.RES has 636 observations and 40 variables.
NOTE: PROCEDURE MIXED used (Total process time):
real time 0.46 seconds
cpu time 0.32 seconds

```
174 quit;  
175  
176 /* Testing equivalence of measured intake by RFPM and direct weights */  
177 /* Caregiver subgroup analysis */  
178 data tost_care;  
179 set ls3;  
180 %equivt;  
181 keep Care effect oz estimate stderr lower upper pval5 pval7_5 pval10;  
182 run;
```

NOTE: There were 10 observations read from the data set WORK.LS3.
NOTE: The data set WORK.TOST_CARE has 10 observations and 10 variables.
NOTE: DATA statement used (Total process time):
real time 0.01 seconds
cpu time 0.03 seconds

```
183 proc print data=tost_care noobs;
```

184 run;

NOTE: There were 10 observations read from the data set WORK.TOST_CARE.

NOTE: PROCEDURE PRINT used (Total process time):

real time 0.08 seconds

cpu time 0.01 seconds