Comparison of effects of four weaning methods on health and performance of beef calves

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Animal ; supplemental materials

Supplemental Material S1: SAS code

Both locations, all calves for full study period

The first code was done simply as a survey of the full study, including all calves at all times. Diagnostics were included (`s residual influence (iter=5 effect=ID est`)to examine for the influence of individual calves on the model.

Note that "weight1" and "date1" were initial values used for blocking and assignment to treatment. Weight2 was used as "entry weight" for the trial. The GROUP = command allows for unstructured estimates of variance for each level of a grouping (in most cases, source or location). See section 9.6.2 in Littell RC, Milliken GA, et al., "SAS for Mixed Models," 2nd Ed.)

```
proc mixed data = agron3.allstep1;
title 'all calves Time*time interactions no outpred';
class source ID trtmt sex;
model wts= source|time|trtmt time*time time*time*source time*time*source*trtmt sex
base / ddfm = kr solution s
residual
influence (iter=5 effect=ID est);
random int time / type =un sub = ID group = source;
run;
proc mixed data = agron3.allstep1;
title 'all calves time*time interactions with outpred';
class source ID trtmt dummy sex;
model wts= source|time|trtmt time*time time*time*source time*time*source*trtmt sex
base / ddfm = kr solution outpred = agron4.alltimequad;
random int time / type =un sub = ID group = source;
run;
proc sort data= agron3.AlltimeQuad;
by ID;
data agron4.predgain ; set agron4.AlltimeQuad;
keep ID source sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date1
date2 date3 date4 date5 date6 date7 date8;
by ID;
if first.ID then do;
pwt1 = . ;
pwt2 =  . ;
pwt3 =  . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if  time = -2 then do;
pwt1=pred;
end;
if time = -1 then do;
pwt2=pred;
end;
```

```
if time = 0 then do;
pwt3=pred;
end;
if time = 1 then do;
pwt4=pred;
end;
if time = 2 then do;
pwt5=pred;
end;
if time = 3 then do;
pwt6=pred;
end;
if last.ID then output;

retain ID pwt1-pwt6;
run;
data agron4.AllGainquad; set agron4.Predgain  ;
PredGain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3) ;
run;
proc glm data = agron4.AllgainQuad;
class trtmt;
model predGain = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted gains full study compare trtmts';
run;
proc mixed data = agron4.AllgainQuad;
class trtmt;
model predGain= trtmt;
lsmeans trtmt / adjust = tukey;
run;
proc glm data = agron4.AllgainQuad;
class trtmt;
model predADG = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted ADG full compare trtmts';
run;
proc mixed data = agron4.AllgainQuad;
class trtmt;
model predADG= trtmt;
lsmeans trtmt / adjust = tukey;
run;
```

Both locations, all calves from D-13 to D0 and -13 to D7

The code below was used as first assessment. Results showed multiple interactions with source location, so separate analyses were run for the two locations (see below).

```
data agron4.temp ; set agron3.allkg;
keep source ID trtmt sex staygo base date3 date4 date5 date6 kg3 kg4 kg5 kg6 ;
data agron4.allToD7; set agron4.temp;
array kgs{4} Kg:;
do i=1 to 4 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc mixed data = agron4.AlltoD7;
title 'with weight2 as base Unstructure variance time*time full interactions no
outpred ';
class source ID trtmt sex;
```

```
model wts= source|time|trtmt  time*time time*time*trtmt time*time*source
time*time*source*trtmt sex base / ddfm = kr solution
random int time / type =un sub = ID group = source;
run;
proc mixed data = agron4.AlltoD7;
title 'with weight2 as base Unstructure variance timt*time full interactions with
outpred';
class source ID trtmt sex;
model wts= source|time|trtmt  time*time time*time*trtmt time*time*source
time*time*source*trtmt sex base / ddfm = kr solution outpred = agron4.AllpredD7;
random int time / type =un sub = ID group = source;
run;
```

Note that the above model was used to generate predicted weight values for each calf based upon the complete model. The predicted weight values are then sent to a new file (“OUTPRED = agron4.Allpred7”) which is subsequently analyzed to detect main treatment differences (after arraying data to reflect the repeated measures for each calf).

```
proc sort data= agron4.AllpredD7;
by ID;
data agron4.predd7gains ; set agron4.AllpredD7;
keep ID source sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 date1 date2 date3
date4 date5 date6 ;
by ID;
if first.ID then do;
pwt1 = . ;
pwt2 =  . ;
pwt3 =  . ;
pwt4 = . ;
end;
if  time = -2 then do;
pwt1=pred;
end;
if time = -1 then do;
pwt2=pred;
end;
if time = 0 then do;
pwt3=pred;
end;
if time = 1 then do;
pwt4=pred;
end;
if last.ID then output;
retain ID pwt1-pwt4;
run;
data agron4.PredD7ADG ; set agron4.predD7gains  ;
PredGain = pwt4 - pwt1;
predADG = Predgain/(date6 - date3) ;
run;
proc glm data = agron4.PredD7ADG;
class trtmt;
model predGain = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted gains to D7 compare trtmts';
run;
proc mixed data = agron4.PredD7ADG;
class trtmt;
model predGain= trtmt;
lsmeans trtmt / adjust = tukey;
run;
```

```
proc glm data = agron4.PredD7ADG;
class trtmt;
model predADG = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted ADG to D7 compare trtmts';
run;
proc mixed data = agron4.PredD7ADG;
class trtmt;
model predADG= trtmt;
lsmeans trtmt / adjust = tukey;
run;
```

Location #1, all calves from D-13 to D0 and -13 to D7

This model examined the same time interval as above, but only examining the 1st location. Because only the one location was used, no GROUP function was included.

```
data agron4.temp ; set agron3.Lallkg;
keep ID trtmt sex staygo base date3 date4 date5 date6 kg3 kg4 kg5 kg6 ;
data agron4.LToD7; set agron4.temp;
array kgs{4} Kg:;
do i=1 to 4 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc mixed data = agron4.LtoD7;
title 'Lindley only with weight2 as base Unstructure variance timt*time full
interactions no group ';
class  ID trtmt sex;
model wts= time|trtmt  time*time time*time*trtmt  sex base / ddfm = kr solution;
random int time / type =un sub = ID ;
run;
proc mixed data = agron4.LtoD7;
title 'Lindley only with weight2 as base Unstructure variance timt*time full
interactions with outpred';
class ID trtmt sex;
model wts= time|trtmt  time*time time*time*trtmt  sex base / ddfm = kr solution
outpred = agron4.LpredD7;
random int time / type =un sub = ID ;
run;
proc sort data= agron4.LpredD7;
by ID;
data agron4.Lpredd7gains ; set agron4.LpredD7;
keep ID  sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 date3 date4 date5 date6
;
by ID;
if first.ID then do;
pwt1 = . ;
pwt2 =  . ;
pwt3 =  . ;
pwt4 = . ;
end;
if  time = -2 then do;
pwt1=pred;
end;
if time = -1 then do;
pwt2=pred;
end;
```

```
if time = 0 then do;
pwt3=pred;
end;
if time = 1 then do;
pwt4=pred;
end;
if last.ID then output;
retain ID pwt1-pwt4;
run;
data agron4.LPredD7ADG ; set agron4.LpredD7gains  ;
PredGain = pwt4 - pwt1;
predADG = Predgain/(date6 - date3) ;
run;
proc glm data = agron4.LPredD7ADG;
class trtmt;
model predGain = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted gains to D7 compare trtmts';
run;
proc mixed data = agron4.LPredD7ADG;
class trtmt;
model predGain= trtmt;
lsmeans trtmt / adjust = tukey;
run;
proc glm data = agron4.LPredD7ADG;
class trtmt;
model predADG = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted ADG to D7 compare trtmts';
run;
proc mixed data = agron4.LPredD7ADG;
class trtmt;
model predADG= trtmt;
lsmeans trtmt / adjust = tukey;
run;
```

Location #2, all calves from D-13 to D0 and -13 to D7

This is the same program for location #2.

```
data agron4.temp ; set agron3.Rallkg;
keep ID trtmt sex staygo base date3 date4 date5 date6 kg3 kg4 kg5 kg6 ;
data agron4.RToD7; set agron4.temp;
array kgs{4} Kg:;
do i=1 to 4 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc mixed data = agron4.RtoD7;
title 'Range only with weight2 as base Unstructure variance timt*time full
interactions no group ';
class  ID trtmt sex;
model wts= time|trtmt  time*time time*time*trtmt  sex base / ddfm = kr solution;
random int time / type =un sub = ID ;
run;
proc mixed data = agron4.RtoD7;
title 'Range only with weight2 as base Unstructure variance timt*time full
interactions with outpred';
class ID trtmt sex;
```

```
model wts= time|trtmt  time*time time*time*trtmt  sex base / ddfm = kr solution
outpred = agron4.RpredD7;
random int time / type =un sub = ID ;
run;
proc sort data= agron4.RpredD7;
by ID;
data agron4.Rpredd7gains ; set agron4.RpredD7;
keep ID  sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 date3 date4 date5 date6
;
by ID;
if first.ID then do;
pwt1 = . ;
pwt2 =  . ;
pwt3 =  . ;
pwt4 = . ;
end;
if  time = -2 then do;
pwt1=pred;
end;
if time = -1 then do;
pwt2=pred;
end;
if time = 0 then do;
pwt3=pred;
end;
if time = 1 then do;
pwt4=pred;
end;
if last.ID then output;
retain ID pwt1-pwt4;
run;
data agron4.RPredD7ADG ; set agron4.RpredD7gains  ;
PredGain = pwt4 - pwt1;
predADG = Predgain/(date6 - date3) ;
run;
proc glm data = agron4.RPredD7ADG;
class trtmt;
model predGain = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted gains to D7 compare trtmts';
run;
proc mixed data = agron4.RPredD7ADG;
class trtmt;
model predGain= trtmt;
lsmeans trtmt / adjust = tukey;
run;
proc glm data = agron4.RPredD7ADG;
class trtmt;
model predADG = trtmt;
lsmeans trtmt / adjust = tukey;
title ' All calves predicted ADG to D7 compare trtmts';
run;
proc mixed data = agron4.RPredD7ADG;
class trtmt;
model predADG= trtmt;
lsmeans trtmt / adjust = tukey;
run;
```

Both sources, abruptly weaned calves excluded; from D-13 to D28 and D7 to D28

This model excludes the abruptly weaned calves so that the effect of shipping on D7 vs. D28 can be assessed. It includes calves from both sources, and again uses "GROUP =" to account for heterogeneity of variance between the two sources. Multiple location interactions were again present, so each location was subsequently assessed individually (see below).

```
data agron4.temp; set agron3.noabrpt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp2; set agron4.temp;
keep source ID staygo base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4
kg5 kg6 kg7 kg8;
data agron4.noabrptalltime; set agron4.temp2;
keep source ID staygo base sex trtmt time wts date3 date4 date5 date6 date7 date8
;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.noabrptalltime;
by ID;
run;
proc mixed data = agron4.noabrptalltime;
class source ID trtmt staygo sex ;
model wts= source|trtmt|time|staygo time*time time*time*trtmt
time*time*source*trtmt time*time*staygo time*time*source*staygo sex base /ddfm =
kr solution outpred = agron4.noabptlong;
random int time / type = un sub = ID group = source;
title 'Both sources, no abrupt D-13 to D28';
run;
data agron4.temp2; set agron4.temp;
keep source ID staygo base sex trtmt date3 date6 date7 date8  kg6 kg7 kg8;
data agron4.noabrpt; set agron4.temp2;
keep source ID staygo base sex trtmt time wts date3 date6 date7 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.noabrpt;
by ID;
run;
proc mixed data = agron4.noabrpt;
class source ID trtmt staygo sex ;
model wts= source|trtmt|time|staygo time*time time*time*trtmt
time*time*source*trtmt sex base /ddfm = kr solution outpred = agron4.noabptshort;
random int time / type = un sub = ID group = source;
title 'Both sources, no abrupt ship to end';
run;
```

```
proc sort data= agron4.noabptlong;
by id;
data agron4.temp1 ; set agron4.noabptlong;
keep ID source staygo sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6
date3 date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.noabptLonggains ; set agron4.temp1;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.noabptlonggains;
class trtmt staygo ;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = Tukey;
lsmeans staygo / adjust = tukey;
title 'Both sources no abrupt Predicted gains over full study';
run;
proc glm data = agron4.noabptlonggains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = tukey;
lsmeans staygo/ adjust = tukey;
title 'both sources no abrupt Predicted ADG over full study';
run;
proc sort data= agron4.noabptshort;
by id;
data agron4.temp1 ; set agron4.noabptshort;
keep ID source sex staygo trtmt base time wts pred  pwt4 pwt5 pwt6 date3 date6
date8;
by id;
if first.ID then do;
pwt4 = .;
pwt5 = . ;
```

```
pwt6 = . ;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt4-pwt6;
run;
data agron4.noabptshortgains ; set agron4.temp1;
predgain = pwt6 - pwt4;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.noabptshortgains;
class trtmt staygo;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt*staygo /  diff adjust = tukey;
title 'Both sources no abrupt Predicted gains post ship';
run;
proc glm data = agron4.noabptshortgains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'both sources no abrupt Predicted ADG post ship';
run;
quit;
```

Source #1 abruptly weaned calves excluded; D-13 to D28 and D7 to D28

The same approach as was used immediately above, only including location #1.

```
data agron4.lnoabrptfull; set agron3.lnoabpt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp1; set agron4.lnoabrptfull;
keep ID staygo base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6
kg7 kg8;
data agron4.lnoabrptalltime; set agron4.temp1;
keep ID staygo base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.lnoabrptalltime;
by ID;
run;
proc mixed data = agron4.lnoabrptalltime;
class ID trtmt staygo sex ;
```

```
model wts= trtmt|time|staygo time*time time*time*trtmt  time*time*staygo sex base
/ddfm = kr solution outpred = agron4.lnoabptlong;
random int time / type = un sub = ID ;
title 'Lindley only, no abrupt D-13 to D28';
run;
data agron4.ltemp ; set agron4.temp1;
keep ID staygo base sex trtmt date3 date6 date8 kg6 kg7 kg8;
data agron4.lnoabrpt; set agron4.ltemp;
keep ID staygo base sex trtmt time wts date3 date6 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.lnoabrpt;
by ID;
run;
proc mixed data = agron4.lnoabrpt;
class  ID trtmt staygo sex ;
model wts= trtmt|time|staygo time*time time*time*trtmt sex base /ddfm = kr
solution outpred = agron4.Lnoabptshort;
random int time / type = un sub = ID ;
title 'Lindley only, no abrupt ship to end';
run;
proc sort data= agron4.Lnoabptlong;
by id;
data agron4.temp1 ; set agron4.Lnoabptlong;
keep ID staygo sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3
date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.LnoabptLonggains ; set agron4.temp1;
```

```
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.Lnoabptlonggains;
class trtmt staygo ;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = Tukey;
lsmeans staygo / adjust = tukey;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'Lindley no abrupt Predicted gains over full study';
run;
proc glm data = agron4.Lnoabptlonggains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = tukey;
lsmeans staygo/ adjust = tukey;
lsmeans trtmt*staygo / diff adjust= tukey;
title 'Lindley no abrupt Predicted ADG over full study';
run;
proc sort data= agron4.Lnoabptshort;
by id;
data agron4.temp1 ; set agron4.Lnoabptshort;
keep ID sex staygo trtmt base time wts pred  pwt4 pwt5 pwt6 date3 date6 date8;
by id;
if first.ID then do;
pwt4 = .;
pwt5 = . ;
pwt6 = . ;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt4-pwt6;
run;
data agron4.Lnoabptshortgains ; set agron4.temp1;
predgain = pwt6 - pwt4;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.Lnoabptshortgains;
class trtmt staygo;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt*staygo /  diff adjust = tukey;
title 'Lindley no abrupt Predicted gains post ship';
run;
proc glm data = agron4.Lnoabptshortgains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'Lindley no abrupt Predicted ADG post ship';
run;
quit;
```

Source #2 abruptly weaned calves excluded; D-13 to D28 and D7 to D28

Same approach as used above, only including calves from location #2.

```
data agron4.Rnoabrptfull; set agron3.Rnoabpt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp1; set agron4.Rnoabrptfull;
keep ID staygo base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6
kg7 kg8;
data agron4.Rnoabrptalltime; set agron4.temp1;
keep ID staygo base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.Rnoabrptalltime;
by ID;
run;
proc mixed data = agron4.Rnoabrptalltime;
class ID trtmt staygo sex ;
model wts= trtmt|time|staygo time*time time*time*trtmt  time*time*staygo sex base
/ddfm = kr solution outpred = agron4.Rnoabptlong;
random int time / type = un sub = ID ;
title 'Range only, no abrupt D-13 to D28';
run;
data agron4.Rtemp ; set agron4.temp1;
keep ID staygo base sex trtmt date3 date6 date8 kg6 kg7 kg8;
data agron4.Rnoabrpt; set agron4.Rtemp;
keep ID staygo base sex trtmt time wts date3 date6 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.Rnoabrpt;
by ID;
run;
proc mixed data = agron4.Rnoabrpt;
class  ID trtmt staygo sex ;
model wts= trtmt|time|staygo time*time time*time*trtmt sex base /ddfm = kr
solution outpred = agron4.Rnoabptshort;
random int time / type = un sub = ID ;
title 'Range only, no abrupt ship to end';
run;
proc sort data= agron4.Rnoabptlong;
by id;
data agron4.temp1 ; set agron4.Rnoabptlong;
keep ID staygo sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3
date6 date8;
by id;
if first.ID then do;
```

```
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.RnoabptLonggains ; set agron4.temp1;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.Rnoabptlonggains;
class trtmt staygo ;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = Tukey;
lsmeans staygo / adjust = tukey;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'Range no abrupt Predicted gains over full study';
run;
proc glm data = agron4.Rnoabptlonggains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = tukey;
lsmeans staygo/ adjust = tukey;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'Range no abrupt Predicted ADG over full study';
run;
proc sort data= agron4.Rnoabptshort;
by id;
data agron4.temp1 ; set agron4.Rnoabptshort;
keep ID sex staygo trtmt base time wts pred  pwt4 pwt5 pwt6 date3 date6 date8;
by id;
if first.ID then do;
pwt4 = .;
pwt5 = . ;
pwt6 = . ;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
```

```
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt4-pwt6;
run;
data agron4.Rnoabptshortgains ; set agron4.temp1;
predgain = pwt6 - pwt4;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.Rnoabptshortgains;
class trtmt staygo;
model predgain =trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = tukey;
lsmeans staygo /adjust = tukey;
lsmeans trtmt*staygo /  diff adjust = tukey;
title 'Range no abrupt Predicted gains post ship';
run;
proc glm data = agron4.Rnoabptshortgains;
class trtmt staygo;
model predADG = trtmt staygo trtmt*staygo;
lsmeans trtmt / adjust = tukey;
lsmeans staygo /adjust = tukey;
lsmeans trtmt*staygo / diff adjust = tukey;
title 'Range no abrupt Predicted ADG post ship';
run;
quit;
```

Both sources, calves that stayed at ranch & AW-I, D-13 to D28

This program examined all calves that remained on the ranch until D28 (excludes those shipped on D7). The AW-I group was retained as a negative control to compare each long-term retained treatment to a negative control of abrupt weaning with immediate shipment. As with previous attempts, location interactions necessitated examination of the locations separately.

```
data agron4.temp; set agron3.AConly;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp2; set agron4.temp;
keep source ID base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6
kg7 kg8;
data agron4.ACalltime; set agron4.temp2;
keep source ID base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.ACalltime;
by ID;
run;
proc mixed data = agron4.ACalltime;
```

```
class source ID trtmt  sex ;
model wts= source|trtmt|time time*time time*time*trtmt time*time*source*trtmt sex
base /ddfm = kr solution outpred = agron4.AClong;
random int time / type = un sub = ID group = source;
title 'Both sources, A and C only D-13 to D28';
run;
data agron4.temp2; set agron4.temp;
keep source ID base sex trtmt date3 date6 date7 date8  kg6 kg7 kg8;
data agron4.ACD7D28; set agron4.temp2;
keep source ID base sex trtmt time wts date3 date6 date7 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.ACD7D28;
by ID;
run;
proc mixed data = agron4.ACD7D28;
class source ID trtmt sex ;
model wts= source|trtmt|time time*time time*time*trtmt time*time*source*trtmt sex
base /ddfm = kr solution outpred = agron4.ACshort;
random int time / type = un sub = ID group = source;
title 'Both sources, A & C only D7 to D28';
run;
proc sort data= agron4.AClong;
by id;
data agron4.temp1 ; set agron4.AClong;
keep ID source sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3
date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
```

```
data agron4.ACLonggains ; set agron4.temp1;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.AClonggains;
class trtmt  ;
model predgain =trtmt  ;
lsmeans trtmt / adjust = Tukey;
title 'Both sources A & C only Predicted gains over full study';
run;
proc glm data = agron4.AClonggains;
class trtmt ;
model predADG = trtmt ;
lsmeans trtmt / adjust = tukey;
title 'both sources A & C Predicted ADG over full study';
run;
proc sort data= agron4.ACshort;
by id;
data agron4.temp1 ; set agron4.ACshort;
keep ID source sex trtmt base time wts pred  pwt4 pwt5 pwt6 date3 date6 date8;
by id;
if first.ID then do;
pwt4 = .;
pwt5 = . ;
pwt6 = . ;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt4-pwt6;
run;
data agron4.ACshortgains ; set agron4.temp1;
predgain = pwt6 - pwt4;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.ACshortgains;
class trtmt ;
model predgain =trtmt ;
lsmeans trtmt /  adjust = tukey;
title 'Both sources A & C Predicted gains post ship';
run;
proc glm data = agron4.ACshortgains;
class trtmt ;
model predADG = trtmt;
lsmeans trtmt /  adjust = tukey;
title 'both sources A & C Predicted ADG post ship';
run;
quit;
```

Source #1, calves that stayed at ranch & AW-I; various time periods

Assessment of D28 groups with AW-I as negative control, for location #1 only.

```
data agron4.AConlyL; set agron4.LAConly;
```

```
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.Ltemp; set agron4.AConlyL;
keep ID base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6 kg7
kg8;
data agron4.AConlyforL; set agron4.Ltemp;
keep ID base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.AConlyforl;
by ID;
run;
proc mixed data = agron4.ACOnlyforl;
class ID  trtmt sex ;
model wts= trtmt|time time*time time*time*trtmt  sex base /ddfm = kr solution
outpred = agron4.AConlyforLlong;
store agron4.LACTemp;
random int time / type = un sub = ID ;
lsmeans trtmt / diff ;
title 'Grps A & C from Lindley only D-13 to D28';
run;
Proc PLM restore = agron4.LACTemp;
estimate  'slope 24' time 1 trtmt*time 1 0 0 0 ,
  'slope Abrupt' time 1 trtmt*time 0 1 0 0 ,
  'slope fence' time 1 trtmt*time 0 0 1 0 ,
  'slope flap' time 1 trtmt*time 0 0 0 1 / e;
proc sort data= agron4.AConlyforllong;
by id;
data agron4.LACtemp ; set agron4.AConlyforllong;
keep ID sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3 date6
date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
```

```
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.AConlyLLonggains ; set agron4.LACtemp;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.AConlyLlonggains;
class trtmt ;
model predgain =trtmt;
lsmeans trtmt / adjust = Tukey;
title 'Grps A & C from Lindley only Predicted gains over full study';
run;
proc glm data = agron4.AConlyLlonggains;
class trtmt ;
model predADG = trtmt ;
lsmeans trtmt / adjust = tukey;
title 'A & C from Lindley only Predicted ADG over full study';
run;
data agron4.Ltemp; set agron4.AConlyL;
keep ID base sex trtmt date3 date4 date5 date6 date7 date8 kg6 kg7 kg8;
data agron4.ACLD7D28; set agron4.Ltemp;
keep ID base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.AClD7D28;
by ID;
run;
proc mixed data = agron4.AClD7D28;
class ID  trtmt sex ;
model wts= trtmt|time time*time time*time*trtmt  sex base /ddfm = kr solution
outpred = agron4.AConlyforLshort;
store agron4.LACTemp2;
random int time / type = un sub = ID ;
lsmeans trtmt / diff ;
title 'Grps A & C from Lindley only D7 to D28';
run;
Proc PLM restore = agron4.LACTemp2;
estimate  'slope 24' time 1 trtmt*time 1 0 0 0 ,
  'slope Abrupt' time 1 trtmt*time 0 1 0 0 ,
  'slope fence' time 1 trtmt*time 0 0 1 0 ,
  'slope flap' time 1 trtmt*time 0 0 0 1 / e;
data agron4.LACtemp2 ; set agron4.AConlyforlshort;
keep ID sex trtmt base time wts pred pwt1 pwt2 pwt3 date3 date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
```

```
pwt5 = . ;
pwt6 = . ;
end;
if time = 1 then do;
pwt1 = pred;
end;
if time = 2 then do;
pwt2 = pred;
end;
if time =3 then do;
pwt3 = pred;
end;
if last.id then output;
retain ID pwt1-pwt3;
run;
data agron4.AConlyLshortgains ; set agron4.LACtemp2;
predgain = pwt3 - pwt1;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.AConlyLshortgains;
class trtmt ;
model predgain =trtmt;
lsmeans trtmt / adjust = Tukey;
title 'Grps A & C from Lindley only Predicted gains D7 to D28';
run;
proc glm data = agron4.AConlyLshortgains;
class trtmt ;
model predADG = trtmt ;
lsmeans trtmt / adjust = tukey;
title 'A & C from Lindley only Predicted ADG D7 to D28';
run;quit;
```

Source #2, calves that stayed at ranch & AW-I; various time intervals

Assessment of D28 groups with AW-I as negative control, for location #2 only.

```
data agron4.AConlyR; set agron4.RAConly;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.Rtemp; set agron4.AConlyR;
keep ID base sex trtmt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6 kg7
kg8;
data agron4.AConlyforR; set agron4.Rtemp;
keep ID base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.AConlyforR;
```

```
by ID;
run;
proc mixed data = agron4.ACOnlyforR;
class ID  trtmt sex ;
model wts= trtmt|time time*time time*time*trtmt  sex base /ddfm = kr solution
outpred = agron4.AConlyforRlong;
random int time / type = un sub = ID ;
lsmeans trtmt / diff ;
title 'Grps A & C from Range only D-13 to D28';
run;
proc sort data= agron4.AConlyforRlong;
by id;
data agron4.RACtemp ; set agron4.AConlyforRlong;
keep ID sex trtmt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3 date6
date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.AConlyRLonggains ; set agron4.RACtemp;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.AConlyRLonggains;
class trtmt ;
model predgain =trtmt;
lsmeans trtmt / adjust = Tukey;
title 'Grps A & C from Range only Predicted gains over full study';
run;
proc glm data = agron4.AConlyRLonggains;
class trtmt ;
model predADG = trtmt ;
lsmeans trtmt / adjust = tukey;
title 'A & C from Range only Predicted ADG over full study';
run;
data agron4.Rtemp; set agron4.AConlyR;
```

```
keep ID base sex trtmt date3 date4 date5 date6 date7 date8 kg6 kg7 kg8;
data agron4.ACRD7D28; set agron4.Rtemp;
keep ID base sex trtmt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{3} Kg:;
do i=1 to 3 ;
time = (i-1) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.ACRD7D28;
by ID;
run;
proc mixed data = agron4.ACRD7D28;
class ID  trtmt sex ;
model wts= trtmt|time time*time time*time*trtmt  sex base /ddfm = kr solution
outpred = agron4.AConlyforRshort;
random int time / type = un sub = ID ;
lsmeans trtmt / diff ;
title 'Grps A & C from Range only D7 to D28';
run;
data agron4.RACtemp2 ; set agron4.AConlyforRshort;
keep ID sex trtmt base time wts pred pwt1 pwt2 pwt3 date3 date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = 1 then do;
pwt1 = pred;
end;
if time = 2 then do;
pwt2 = pred;
end;
if time =3 then do;
pwt3 = pred;
end;
if last.id then output;
retain ID pwt1-pwt3;
run;
data agron4.AConlyRshortgains ; set agron4.RACtemp2;
predgain = pwt3 - pwt1;
predADG = Predgain/(date8 - date6);
run;
proc glm data = agron4.AConlyRshortgains;
class trtmt ;
model predgain =trtmt;
lsmeans trtmt / adjust = Tukey;
title 'Grps A & C from Range only Predicted gains D7 to D28';
run;
proc glm data = agron4.AConlyRshortgains;
class trtmt ;
model predADG = trtmt ;
lsmeans trtmt / adjust = tukey;
title 'A & C from Range only Predicted ADG D7 to D28';
run;quit;
```

Both sources, all calves (treatment groups and ship dates combined into single trtmt classification); D-13 to D28

A single variable was created to combine both weaning method and shipment day for all calves. This model examined the full study period for both locations. The locations are examined separately below.

```
data agron4.temp; set agron3.Allstrt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp2; set agron4.temp;
keep source ID base sex strt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6
kg7 kg8;
data agron4.STRTalltime; set agron4.temp2;
keep source ID base sex strt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.STRTalltime;
by ID;
run;
proc mixed data = agron4.STRTalltime;
class source ID strt  sex ;
model wts= source|strt|time time*time time*time*strt time*time*source*strt sex
base /ddfm = kr solution outpred = agron4.STRTlong;
random int time / type = un sub = ID group = source;
title 'Both sources, STRT D-13 to D28';
run;
proc sort data= agron4.STRTlong;
by id;
data agron4.tempSTRT ; set agron4.STRTlong;
keep ID source sex strt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3
date6 date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
```

```
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.STRTLonggains ; set agron4.tempSTRT;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.STRTlonggains;
class strt  ;
model predgain =strt  ;
lsmeans strt / adjust = Tukey;
title 'Both sourcesSTRT Predicted gains over full study';
run;
proc glm data = agron4.STRTlonggains;
class strt ;
model predADG = strt ;
lsmeans strt / adjust = tukey;
title 'both sources STRT Predicted ADG over full study';
run;
quit;
```

Source #1, all calves (treatment groups and ship dates combined into single trtmt classification); D-13 to D28

A single variable was created to combine both weaning method and shipment day for all calves. This model examined the full study period for location #1 only.

```
data agron4.StrtonlyL; set agron4.LStrt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.Ltemp; set agron4.StrtonlyL;
keep ID base sex strt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6 kg7 kg8;
data agron4.StrtonlyforL; set agron4.Ltemp;
keep ID base sex strt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.strtonlyforl;
by ID;
run;
proc mixed data = agron4.strtOnlyforl;
class ID  strt sex ;
```

```
model wts= strt|time time*time time*time*strt  sex base /ddfm = kr solution
outpred = agron4.StrtforLlong;
store agron4.LSTRTTemp;
random int time / type = un sub = ID ;
lsmeans strt / diff ;
title 'STRT from Lindley only D-13 to D28';
run;


Proc PLM restor = agron4.LGrpATemp;
estimate  'slope 24' time 1 strt*time 1 0 0 0 ,
  'slope Abrupt' time 1 strt*time 0 1 0 0 ,
  'slope fence' time 1 strt*time 0 0 1 0 ,
  'slope flap' time 1 strt*time 0 0 0 1 / e;
proc sort data= agron4.STRTforllong;
by id;
data agron4.LtempSTRT ; set agron4.STRTforllong;
keep ID sex strt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3 date6
date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.STRTforLLonggains ; set agron4.LtempSTRT;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.STRTforLlonggains;
class strt ;
model predgain =strt;
lsmeans strt / adjust = Tukey;
title 'STRT from Lindley only Predicted gains over full study';
run;
proc glm data = agron4.STRTforLlonggains;
class strt ;
model predADG = strt ;
```

```
lsmeans strt / adjust = tukey;
title 'STRT from Lindley only Predicted ADG over full study';
run;
quit;
```

Source #2, all calves (treatment groups and ship dates combined into single trtmt classification); D-13 to D28

A single variable was created to combine both weaning method and shipment day for all calves. This model examined the full study period for location #2 only.

```
data agron4.StrtonlyR; set agron4.RStrt;
base = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.Rtemp; set agron4.StrtonlyR;
keep ID base sex strt date3 date4 date5 date6 date7 date8 kg3 kg4 kg5 kg6 kg7 kg8;
data agron4.StrtonlyforR; set agron4.Rtemp;
keep ID base sex strt time wts date3 date4 date5 date6 date7 date8  ;
array kgs{6} Kg:;
do i=1 to 6 ;
time = (i-4) +1 ;
wts = kgs{i};
 output;
 end;
 run;
proc sort data= agron4.strtonlyforR;
by ID;
run;
proc mixed data = agron4.strtOnlyforR;
class ID  strt sex ;
model wts= strt|time time*time time*time*strt  sex base /ddfm = kr solution
outpred = agron4.StrtforRlong;
store agron4.RSTRTTemp;
random int time / type = un sub = ID ;
lsmeans strt / diff ;
title 'STRT from Range only D-13 to D28';
run;


Proc PLM restore = agron4.RGrpATemp;
estimate  'slope 24' time 1 strt*time 1 0 0 0 ,
  'slope Abrupt' time 1 strt*time 0 1 0 0 ,
  'slope fence' time 1 strt*time 0 0 1 0 ,
  'slope flap' time 1 strt*time 0 0 0 1 / e;
proc sort data= agron4.STRTforRlong;
by id;
data agron4.RtempSTRT ; set agron4.STRTforRlong;
keep ID sex strt base time wts pred pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 date3 date6
date8;
by id;
if first.ID then do;
pwt1 = . ;
pwt2 = . ;
pwt3 = . ;
pwt4 = . ;
```

```
pwt5 = . ;
pwt6 = . ;
end;
if time = -2 then do;
pwt1 = pred;
end;
if time = -1 then do;
pwt2 = pred;
end;
if time = 0 then do;
pwt3 = pred;
end;
if time = 1 then do;
pwt4 = pred;
end;
if time = 2 then do;
pwt5 = pred;
end;
if time =3 then do;
pwt6 = pred;
end;
if last.id then output;
retain ID pwt1-pwt6;
run;
data agron4.STRTforRLonggains ; set agron4.RtempSTRT;
predgain = pwt6 - pwt1;
predADG = Predgain/(date8 - date3);
run;
proc glm data = agron4.STRTforRlonggains;
class strt ;
model predgain =strt;
lsmeans strt / adjust = Tukey;
title 'STRT from Range only Predicted gains over full study';
run;
proc glm data = agron4.STRTforRlonggains;
class strt ;
model predADG = strt ;
lsmeans strt / adjust = tukey;
title 'STRT from Range only Predicted ADG over full study';
run;
quit;
```

Graphs were made for both the actual performance and predicted weights from the full model. For the actual performance the code is:

```
data agron4.temp; set agron3.Allstrt;
kg2 = weight2/2.2;
kg3 = weight3/2.2;
kg4 = weight4/2.2;
kg5 = weight5/2.2;
kg6 = weight6/2.2;
kg7 = weight7/2.2;
kg8 = weight8/2.2;
run;
data agron4.temp2; set agron4.temp;
keep strt kg2 kg3 kg4 kg5 kg6 kg7 kg8;
run;
proc sort data= agron4.temp2;
by strt;
run;
```

```
proc means data = agron4.temp2;
by strt;
var kg2 kg3 kg4 kg5 kg6 kg7 kg8;
output out = agron4.Strtplaymean mean= / autoname;
run;
data agron4.Strtplayintermed ; set agron4.Strtplaymean ;
kg2 = kg2_Mean ;
kg3 = kg3_Mean ;
kg4 = kg4_mean ;
kg5 = kg5_mean;
kg6 = kg6_mean;
kg7 = kg7_Mean;
kg8 = kg8_mean;
keep strt kg2 kg3 kg4 kg5 kg6 kg7 kg8;
run;
data agron4.Strtplayfinal; set agron4.Strtplayintermed;
array kgs{7} kg:;
do i =1 to 7;
time = (i-4) +1;
Means = kgs{i};
output;
end;
run;
 proc sgplot data = agron4.Strtplayfinal ;
series y=means x = time / group = strt;
run;
quit;
```

For plotting of the predicted weights (which were generated previously; see above):

```
proc sort data = agron4.tempstrt;
by strt;
run;
data agron4.predplay; set agron4.tempstrt;
keep strt pwt0 pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 ;
pwt0 = base;
run;
proc means data = agron4.predplay;
by strt;
var pwt0 pwt1 pwt2 pwt3 pwt4 pwt5 pwt6 ;
output out = agron4.predplaymean mean= / autoname;
run;
data agron4.predplayintermed ; set agron4.predplaymean ;
kg2 = pwt0_Mean ;
kg3 = pwt1_Mean ;
kg4 = pwt2_mean ;
kg5 = pwt3_mean;
kg6 = pwt4_mean;
kg7 = pwt5_Mean;
kg8 = pwt6_mean;
keep strt kg2 kg3 kg4 kg5 kg6 kg7 kg8;
run;
data agron4.predplayfinal; set agron4.predplayintermed;
array kgs{7} kg:;
do i =1 to 7;
time = (i-4) +1;
Means = kgs{i};
output;
end;
```

```
run;
 proc sgplot data = agron4.predplayfinal ;
series y=means x = time / group = strt;
run;
quit;
```

Supplemental Material S2: Example of SAS output

all calves Time*time interactions no outpred

The Mixed Procedure

Model Information

Data Set	AGRON3.ALLSTEP1
Dependent Variable	wts
Covariance Structure	Unstructured
Subject Effect	ID
Group Effect	source
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information

Class	Levels	Values
source	2	L R
ID	293	1001 1002 1003 1005 1006 1007 1008 1009 1010 1011 1012 1013 1015 1016 1017 1018 1019 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1150 1151 1152 1153 1154 1155 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299

Trtmt	5	24hr ablv abst fenc flap

Class Level Information

Class	Levels	Values
Sex	2	C S

Dimensions

Covariance Parameters	7
Columns in X	52
Columns in Z per Subject	4
Subjects	293
Max Obs per Subject	6

Number of Observations

Number of Observations Read	1794
Number of Observations Used	1724
Number of Observations Not Used	70

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	12459.91680226	
1	2	11575.67021610	0.00000014
2	1	11575.66961824	0.00000000

Convergence criteria met.

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
UN(1,1)	**ID**	**source L**	36.0905
UN(2,1)	**ID**	**source L**	4.2641
UN(2,2)	**ID**	**source L**	1.4259
UN(1,1)	**ID**	**source R**	38.9885

UN(2,1)	**ID**	**source R**	10.6735
UN(2,2)	**ID**	**source R**	7.9348

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
Residual			30.1572

Fit Statistics

-2 Res Log Likelihood	11575.7
AIC (Smaller is Better)	11589.7
AICC (Smaller is Better)	11589.7
BIC (Smaller is Better)	11615.4

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
6	884.25	<.0001

Solution for Fixed Effects

Effect	source	Trtmt	Sex	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept				7.8097	3.5973	285	2.17	0.0308
source	**L**			5.9386	1.8707	187	3.17	0.0018
source	**R**			0	.	.	.	.
time				3.5092	0.7068	90.6	4.97	<.0001
time*source	**L**			-1.6541	0.7574	119	-2.18	0.0309
time*source	**R**			0	.	.	.	.
Trtmt		**24hr**		0.9450	2.2301	99.7	0.42	0.6727
Trtmt		**ablv**		-8.5158	2.7386	99	-3.11	0.0024
Trtmt		**abst**		0.3493	2.6531	99.1	0.13	0.8955
Trtmt		**fenc**		0.3157	2.2209	98	0.14	0.8872
Trtmt		**flap**		0	.	.	.	.
source*Trtmt	**L**	**24hr**		1.1769	2.6096	178	0.45	0.6526
source*Trtmt	**L**	**ablv**		12.3539	3.1856	173	3.88	0.0001

source*Trtmt	**L**	**abst**	0.9333	3.1133	179	0.30	0.7647
source*Trtmt	**L**	**fenc**	2.2486	2.5937	174	0.87	0.3872

Solution for Fixed Effects

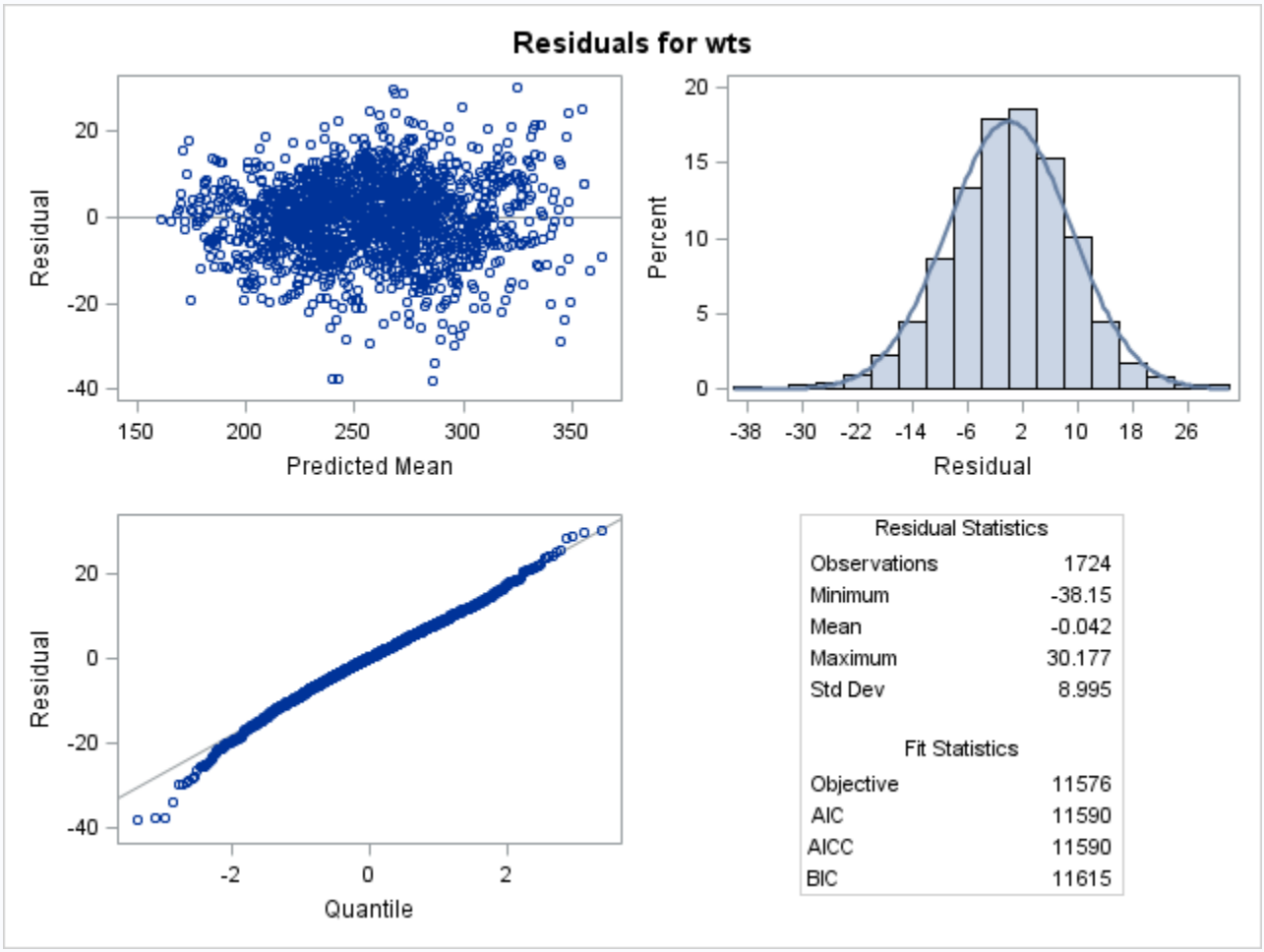
Effect	**source**	**Trtmt**	**Sex**	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**
source*Trtmt	**L**	**flap**		0	.	.	.	.
source*Trtmt	**R**	**24hr**		0	.	.	.	.
source*Trtmt	**R**	**ablv**		0	.	.	.	.
source*Trtmt	**R**	**abst**		0	.	.	.	.
source*Trtmt	**R**	**fenc**		0	.	.	.	.
source*Trtmt	**R**	**flap**		0	.	.	.	.
time*Trtmt		**24hr**		0.6851	1.0157	91.8	0.67	0.5017
time*Trtmt		**ablv**		-3.8405	1.2437	90.4	-3.09	0.0027
time*Trtmt		**abst**		1.8799	1.2084	91.4	1.56	0.1232
time*Trtmt		**fenc**		1.0128	1.0113	90.4	1.00	0.3193
time*Trtmt		**flap**		0	.	.	.	.
time*source*Trtmt	**L**	**24hr**		-0.4817	1.0887	120	-0.44	0.6590
time*source*Trtmt	**L**	**ablv**		3.2272	1.3299	118	2.43	0.0168
time*source*Trtmt	**L**	**abst**		-2.7070	1.2969	120	-2.09	0.0390
time*source*Trtmt	**L**	**fenc**		0.5949	1.0827	118	0.55	0.5837
time*source*Trtmt	**L**	**flap**		0	.	.	.	.
time*source*Trtmt	**R**	**24hr**		0	.	.	.	.
time*source*Trtmt	**R**	**ablv**		0	.	.	.	.
time*source*Trtmt	**R**	**abst**		0	.	.	.	.
time*source*Trtmt	**R**	**fenc**		0	.	.	.	.
time*source*Trtmt	**R**	**flap**		0	.	.	.	.
time*time				-0.1864	0.1987	1132	-0.94	0.3482
time*time*source	**L**			0.2290	0.2344	1131	0.98	0.3289
time*time*source	**R**			0	.	.	.	.
time*time*sour*Trtmt	**L**	**24hr**		0.2292	0.1781	1129	1.29	0.1984
time*time*sour*Trtmt	**L**	**ablv**		-0.7545	0.2131	1129	-3.54	0.0004
time*time*sour*Trtmt	**L**	**abst**		0.3085	0.2143	1129	1.44	0.1502

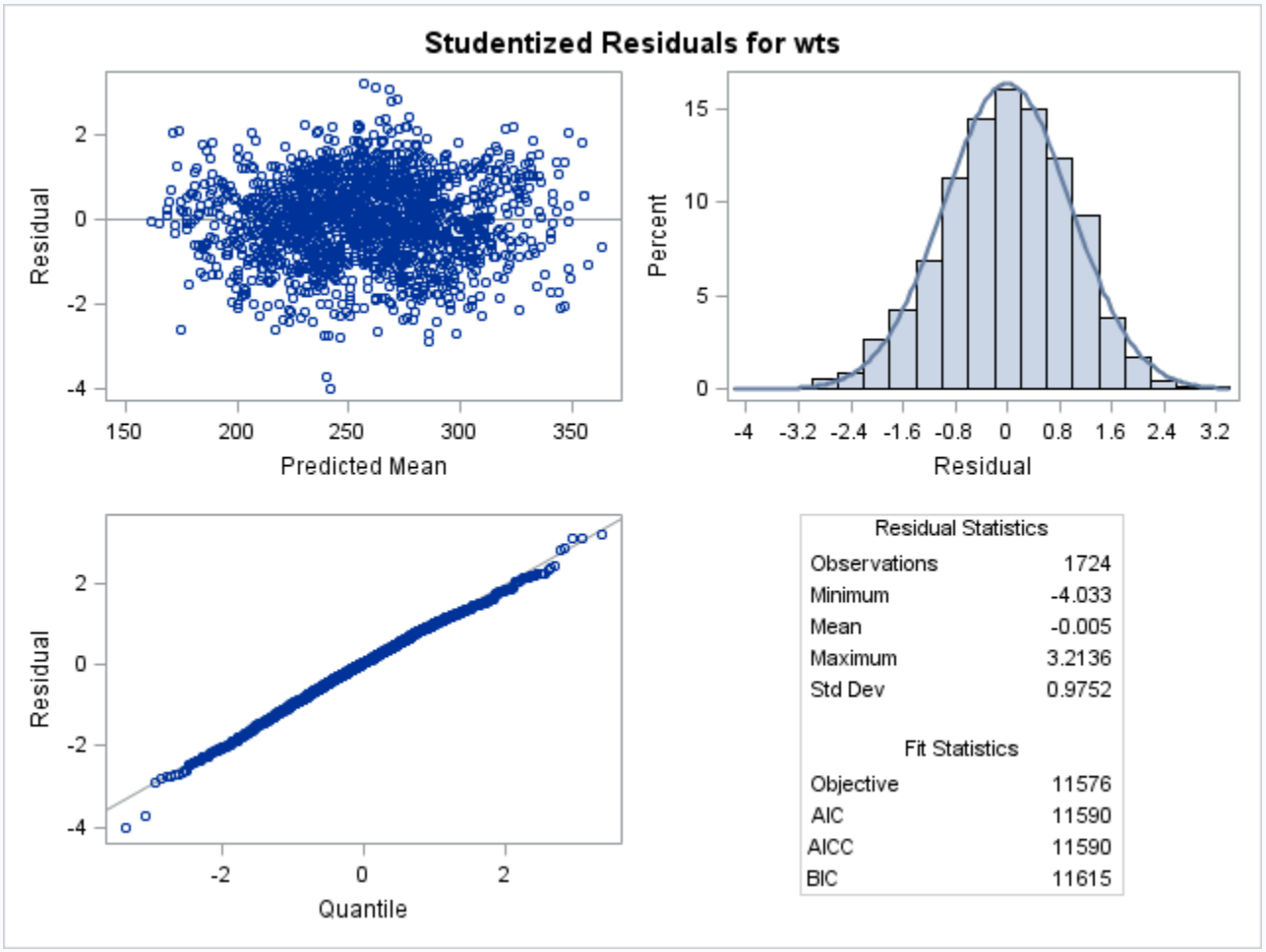
Solution for Fixed Effects

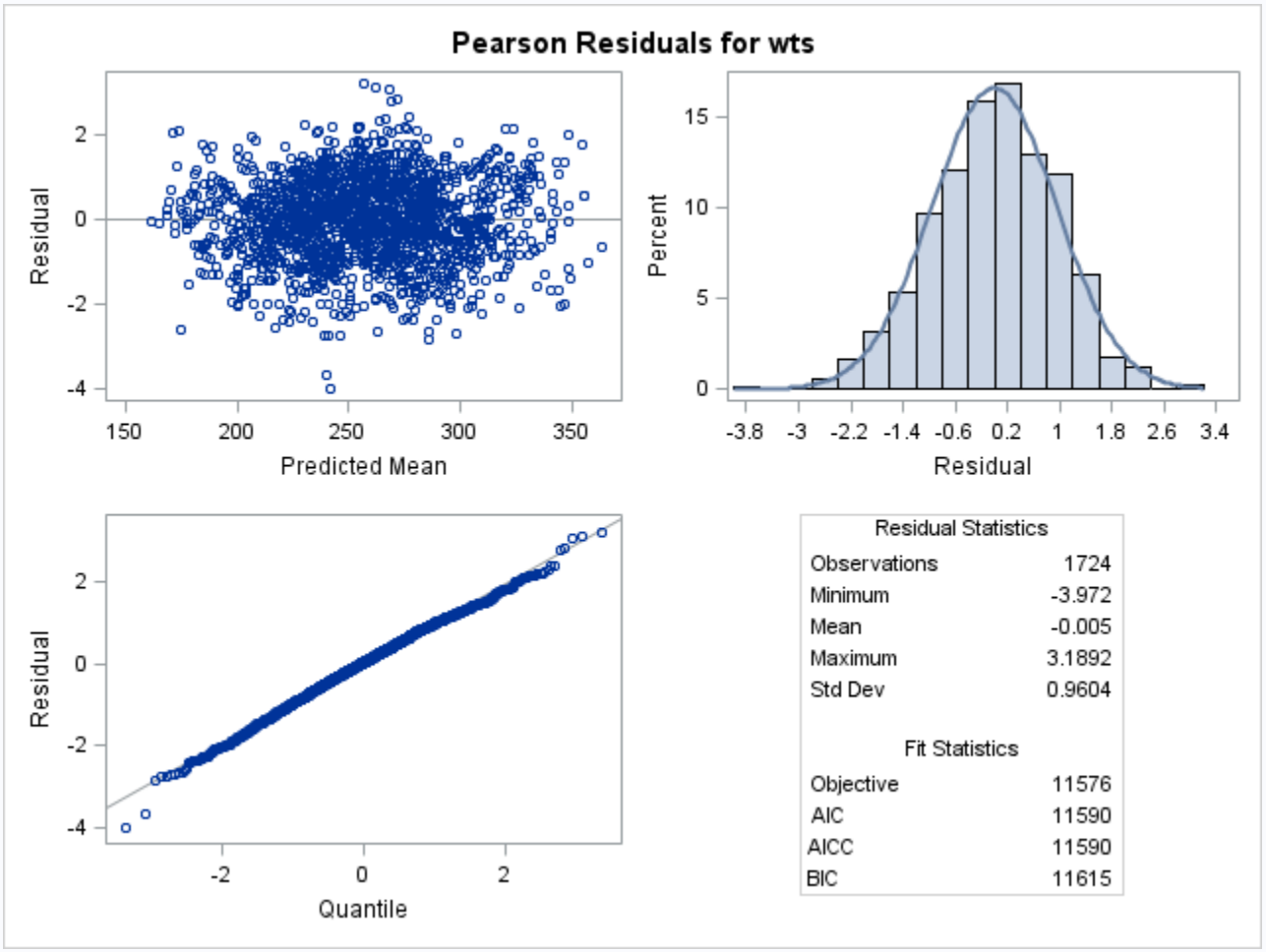
Effect	source	Trtmt	Sex	Estimate	Standard Error	DF	t Value	Pr > |t|
time*time*sour*Trtmt	L	fenc		-0.2392	0.1770	1131	-1.35	0.1769
time*time*sour*Trtmt	L	flap		0	.	.	.	.
time*time*sour*Trtmt	R	24hr		0.5043	0.2878	1140	1.75	0.0800
time*time*sour*Trtmt	R	ablv		0.5600	0.3494	1131	1.60	0.1093
time*time*sour*Trtmt	R	abst		0.5732	0.3390	1131	1.69	0.0912
time*time*sour*Trtmt	R	fenc		0.1743	0.2826	1130	0.62	0.5376
time*time*sour*Trtmt	R	flap		0	.	.	.	.
Sex			C	-1.4574	0.7414	281	-1.97	0.0503
Sex			S	0	.	.	.	.
base				1.0093	0.01164	279	86.68	<.0001

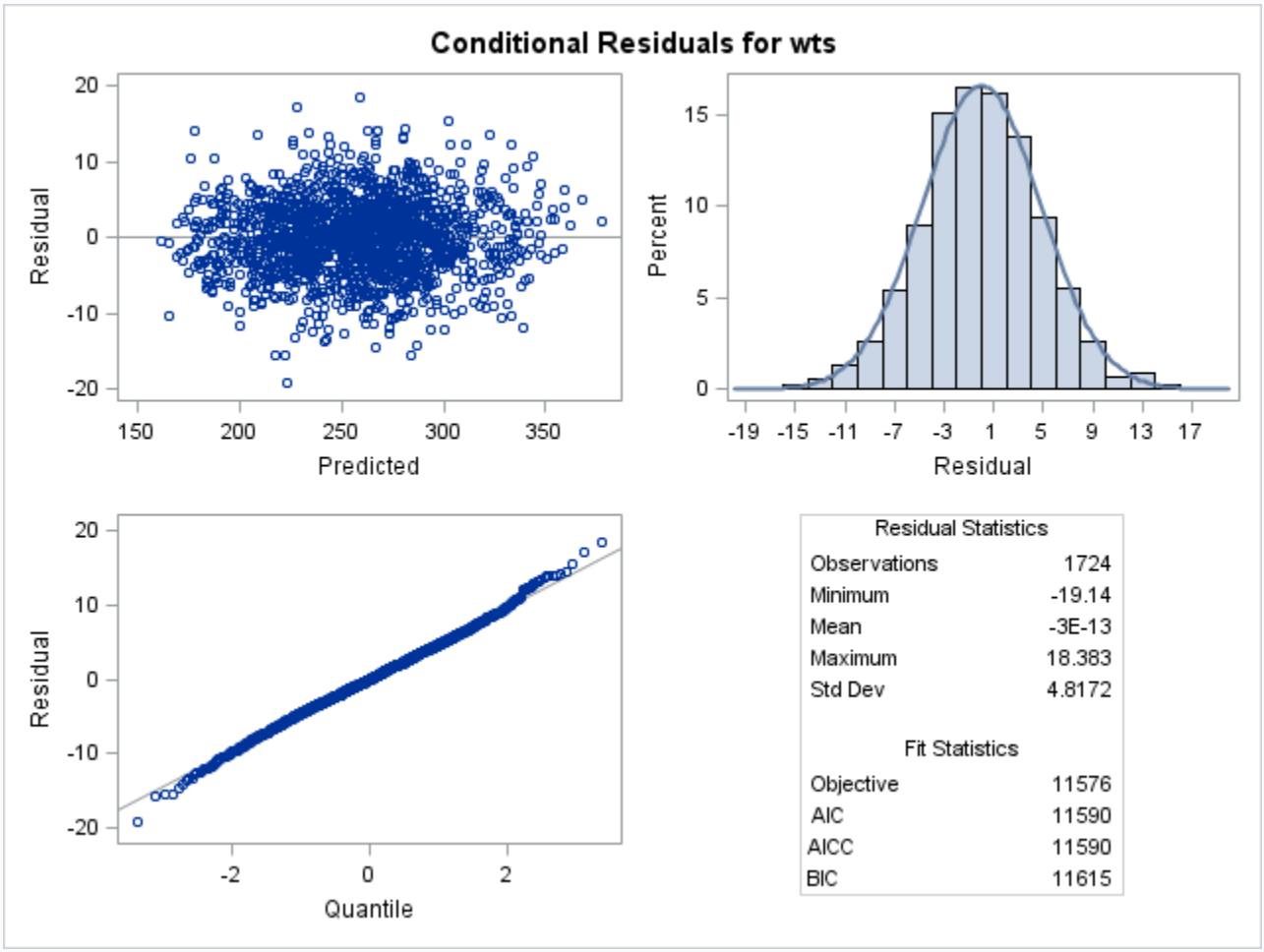
Type 3 Tests of Fixed Effects

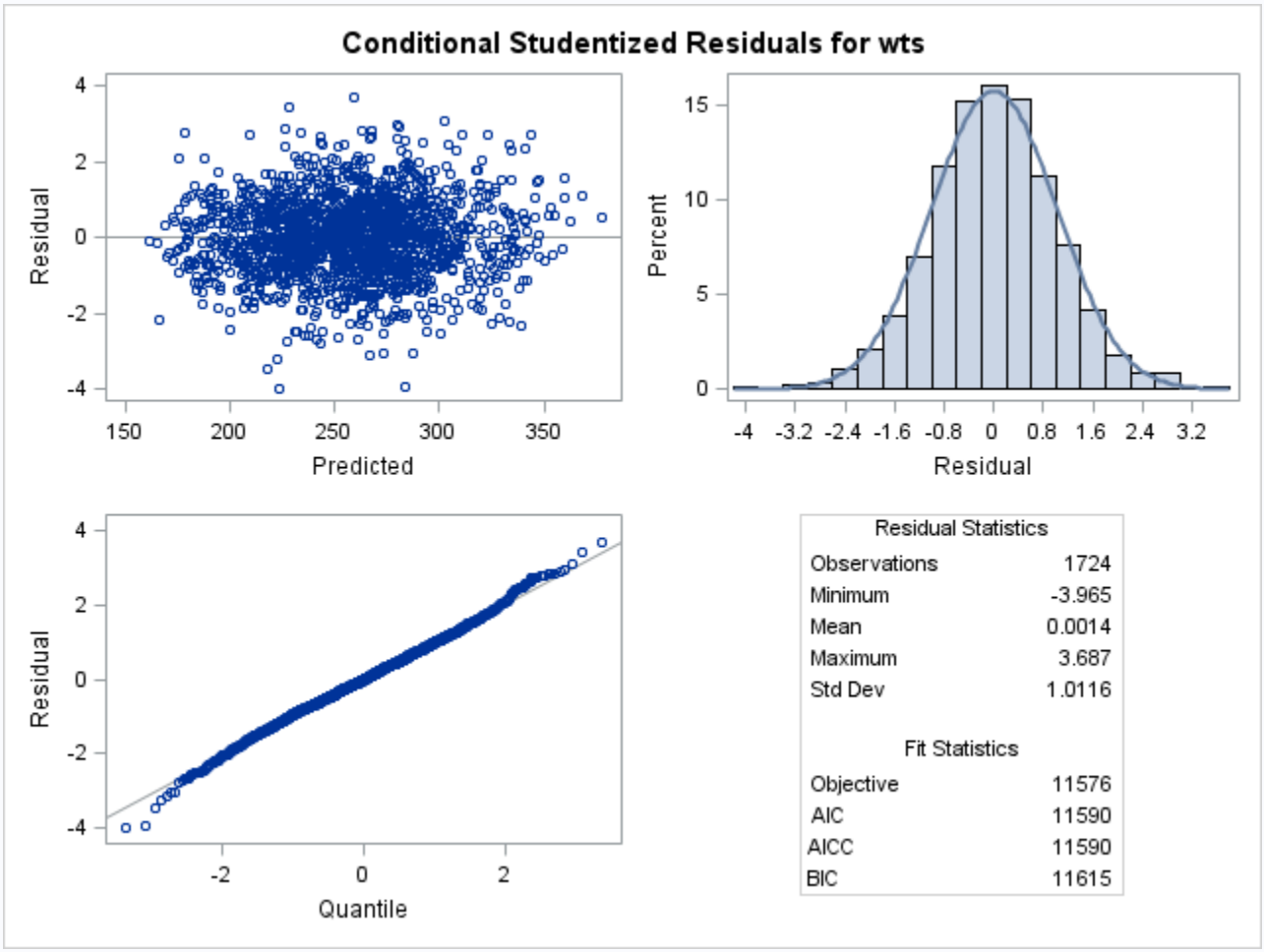
Effect	Num DF	Den DF	F Value	Pr > F
source	1	212	74.17	<.0001
time	1	119	177.44	<.0001
time*source	1	119	14.27	0.0002
Trtmt	4	176	1.83	0.1247
source*Trtmt	4	176	4.25	0.0026
time*Trtmt	4	119	7.25	<.0001
time*source*Trtmt	4	119	4.07	0.0040
time*time	1	1132	1.04	0.3081
time*time*source	1	1132	3.24	0.0721
time*time*sour*Trtmt	8	1131	4.18	<.0001
Sex	1	281	3.86	0.0503
base	1	279	7513.47	<.0001

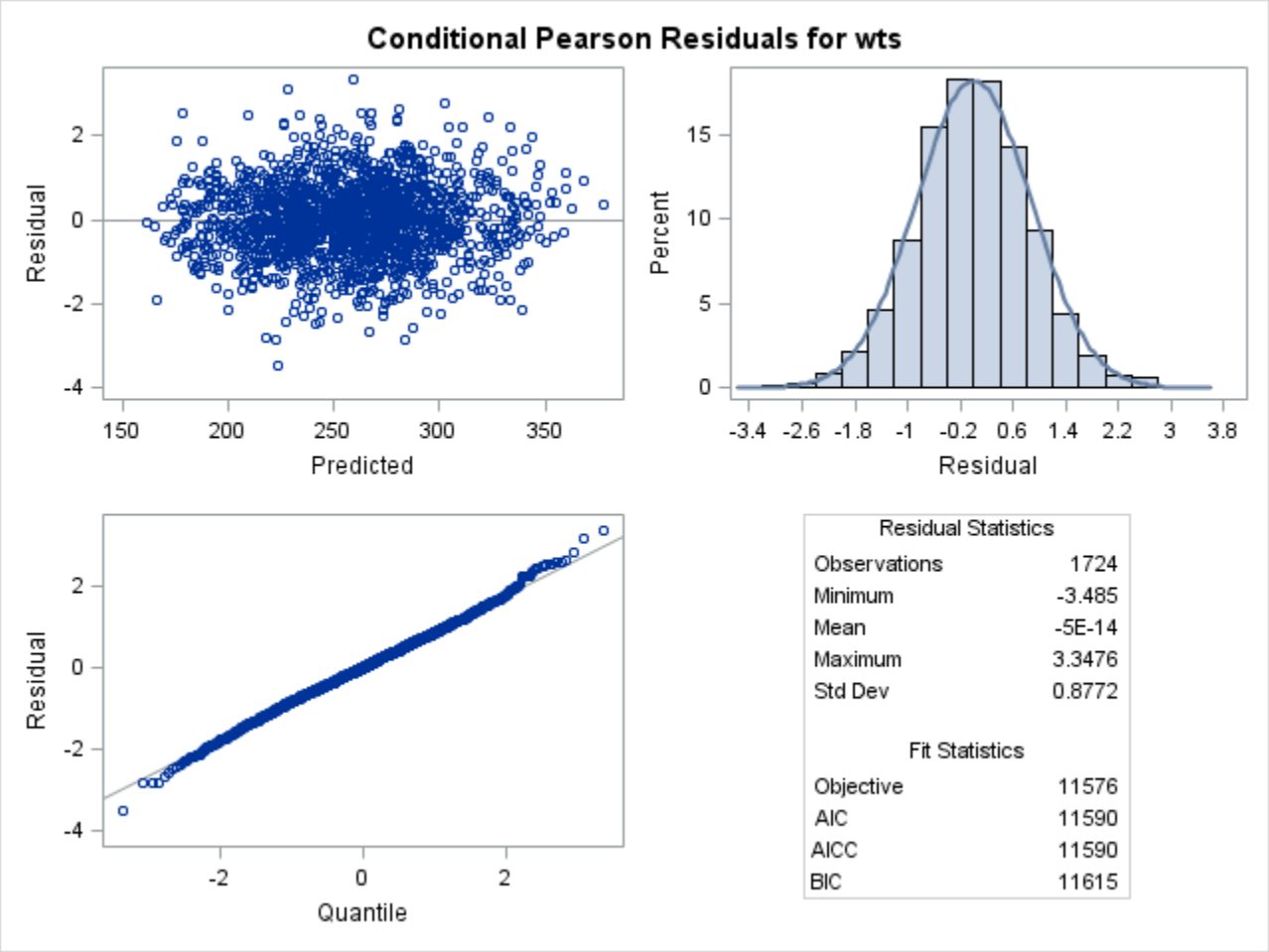

Residuals for wts
Residual
Predicted Mean
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -38.15
Mean -0.042
Maximum 30.177
Std Dev 8.995
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615


Studentized Residuals for wts
Residual
Predicted Mean
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -4.033
Mean -0.005
Maximum 3.2136
Std Dev 0.9752
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615


Pearson Residuals for wts
Residual
Predicted Mean
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -3.972
Mean -0.005
Maximum 3.1892
Std Dev 0.9604
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615


Conditional Residuals for wts
Residual
Predicted
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -19.14
Mean -3E-13
Maximum 18.383
Std Dev 4.8172
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615


Conditional Studentized Residuals for wts
Residual
Predicted
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -3.965
Mean 0.0014
Maximum 3.687
Std Dev 1.0116
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615


Conditional Pearson Residuals for wts
Residual
Predicted
Percent
Residual
Residual
Quantile
Residual Statistics
Observations 1724
Minimum -3.485
Mean -5E-14
Maximum 3.3476
Std Dev 0.8772
Fit Statistics
Objective 11576
AIC 11590
AICC 11590
BIC 11615

Influence Diagnostics for Levels of ID

ID	Number of Observations in Level	Iterations	PRESS Statistic	Cook's D	MDFFITS	COVRATIO	COVTRACE	Cook's D CovParms	MDFFITS CovParms	COVRATIO CovParms	COVTRACE CovParms	RMSE without deleted level	Restricted Likelihood Distance
1001	6	2	61.01	0.00021	0.00020	1.1493	0.1402	0.00751	0.00742	1.0505	0.0496	5.49829	0.0140
1002	6	2	84.96	0.00064	0.00062	1.1372	0.1296	0.00577	0.00571	1.0428	0.0422	5.49830	0.0262
1003	6	2	46.41	0.00055	0.00054	1.1534	0.1438	0.00791	0.00782	1.0523	0.0513	5.49918	0.0256
1005	6	2	1518.31	0.00597	0.00591	0.9829	0.0151	0.06142	0.06378	0.9786	0.0205	5.49713	0.2537
1006	6	2	435.79	0.00231	0.00224	1.0862	0.0840	0.00808	0.00803	1.0338	0.0336	5.48851	0.0788
1007	6	2	223.62	0.00081	0.00080	1.1075	0.1030	0.00302	0.00298	1.0314	0.0311	5.49391	0.0290
1008	6	2	82.65	0.00082	0.00080	1.1378	0.1301	0.00521	0.00514	1.0478	0.0470	5.49594	0.0314
1009	6	2	1240.11	0.00334	0.00330	0.9995	0.0007	0.02301	0.02341	0.9899	0.0097	5.48960	0.1307
1010	6	2	742.47	0.00201	0.00199	1.0406	0.0407	0.01158	0.01166	0.9998	0.0000	5.49094	0.0766
1011	6	2	291.13	0.00203	0.00199	1.0702	0.0689	0.00627	0.00625	1.0213	0.0212	5.49053	0.0709
1012	6	2	103.81	0.00088	0.00086	1.1326	0.1256	0.00459	0.00453	1.0481	0.0473	5.49392	0.0327
1013	6	2	124.91	0.00013	0.00012	1.1307	0.1238	0.00489	0.00482	1.0472	0.0464	5.49420	0.0087
1015	6	2	930.71	0.00226	0.00223	1.0401	0.0402	0.00970	0.00977	1.0050	0.0052	5.49083	0.0841
1016	6	2	184.03	0.00065	0.00063	1.1227	0.1167	0.00352	0.00348	1.0423	0.0417	5.49358	0.0242
1017	6	2	53.18	0.00024	0.00024	1.1563	0.1464	0.00956	0.00946	1.0496	0.0487	5.50055	0.0172
1018	6	2	3018.73	0.00693	0.00706	0.8288	0.1827	0.18950	0.20578	0.8936	0.1083	5.49083	0.4455
1019	6	2	203.25	0.00155	0.00152	1.0684	0.0671	0.00724	0.00721	1.0156	0.0157	5.49349	0.0562
1021	6	2	1185.63	0.00741	0.00749	0.8756	0.1282	0.16925	0.18218	0.9168	0.0833	5.49960	0.4334
1022	6	2	479.01	0.00153	0.00150	1.0793	0.0772	0.00399	0.00395	1.0311	0.0308	5.49054	0.0522
1023	6	2	534.74	0.00360	0.00358	0.9679	0.0313	0.03805	0.03912	0.9762	0.0235	5.48557	0.1577
1024	6	2	191.41	0.00144	0.00141	1.0990	0.0955	0.00623	0.00618	1.0236	0.0235	5.49777	0.0534
1025	6	2	145.50	0.00119	0.00117	1.1115	0.1067	0.00333	0.00328	1.0387	0.0382	5.49161	0.0410
1026	6	2	224.46	0.00190	0.00186	1.1194	0.1138	0.00303	0.00299	1.0437	0.0430	5.49260	0.0637

Influence Diagnostics for Levels of ID

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1027	6	2	428.10	0.00573	0.00565	1.0046	0.0057	0.02304	0.02327	0.9931	0.0066	5.48212	0.2076
1028	6	2	237.24	0.00064	0.00062	1.1120	0.1073	0.00281	0.00277	1.0379	0.0374	5.49032	0.0232
1029	6	2	678.52	0.00190	0.00187	1.0801	0.0780	0.01312	0.01309	1.0124	0.0125	5.49993	0.0749
1030	6	2	690.30	0.00404	0.00394	1.0857	0.0834	0.00981	0.00979	1.0327	0.0325	5.49251	0.1346
1031	6	2	384.26	0.00115	0.00112	1.1233	0.1175	0.00742	0.00733	1.0330	0.0327	5.49909	0.0438
1032	6	2	449.96	0.00316	0.00311	1.0267	0.0272	0.00989	0.00988	1.0061	0.0063	5.48643	0.1107
1033	6	2	523.20	0.00172	0.00167	1.0925	0.0897	0.00703	0.00697	1.0170	0.0171	5.49827	0.0618
1034	6	2	392.91	0.00319	0.00318	1.0334	0.0344	0.04539	0.04655	0.9821	0.0173	5.50059	0.1508
1035	6	2	131.36	0.00153	0.00151	1.0962	0.0928	0.01034	0.01031	1.0233	0.0232	5.49916	0.0601
1036	6	2	421.49	0.00137	0.00135	1.0850	0.0824	0.00354	0.00350	1.0275	0.0273	5.49394	0.0478
1037	6	2	217.11	0.00100	0.00098	1.1187	0.1131	0.00369	0.00364	1.0369	0.0364	5.49556	0.0357
1038	6	2	347.82	0.00426	0.00418	1.0366	0.0374	0.01862	0.01881	1.0050	0.0053	5.48621	0.1545
1039	6	2	549.76	0.00361	0.00355	0.9977	0.0013	0.02749	0.02766	1.0025	0.0027	5.47656	0.1427
1040	5	2	770.49	0.00286	0.00284	1.0360	0.0364	0.03008	0.03069	0.9955	0.0040	5.49776	0.1222
1041	6	2	53.75	0.00020	0.00020	1.1497	0.1407	0.00696	0.00688	1.0493	0.0485	5.49786	0.0133
1042	6	2	1102.62	0.00358	0.00352	1.0063	0.0073	0.01726	0.01740	0.9970	0.0027	5.48574	0.1318
1044	6	2	720.69	0.00120	0.00117	1.0261	0.0266	0.01276	0.01278	1.0121	0.0121	5.48007	0.0516
1045	5	2	447.41	0.00354	0.00349	1.0240	0.0246	0.01480	0.01491	0.9951	0.0047	5.48502	0.1286
1046	6	2	409.54	0.00308	0.00305	1.0212	0.0223	0.03071	0.03122	0.9882	0.0114	5.49858	0.1297
1047	6	2	150.79	0.00097	0.00096	1.1098	0.1052	0.00468	0.00463	1.0283	0.0281	5.49621	0.0359
1048	6	2	914.00	0.00266	0.00264	1.0330	0.0335	0.02246	0.02287	0.9993	0.0003	5.49230	0.1081
1049	6	2	161.27	0.00124	0.00122	1.1020	0.0982	0.00574	0.00570	1.0265	0.0263	5.49602	0.0454
1050	6	2	940.54	0.00271	0.00268	1.0500	0.0500	0.02686	0.02725	1.0008	0.0012	5.49862	0.1136
1051	6	2	141.70	0.00231	0.00226	1.0910	0.0884	0.01393	0.01391	1.0103	0.0105	5.49961	0.0885

Influence Diagnostics for Levels of ID

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1052	6	2	313.91	0.00083	0.00081	1.0968	0.0933	0.00356	0.00352	1.0356	0.0352	5.48877	0.0299
1053	6	2	1180.23	0.00305	0.00303	0.9918	0.0070	0.03089	0.03166	0.9756	0.0241	5.48982	0.1317
1054	6	2	594.32	0.00149	0.00146	1.0993	0.0956	0.01049	0.01042	1.0279	0.0277	5.49951	0.0576
1055	6	2	272.09	0.00030	0.00029	1.1418	0.1356	0.01614	0.01613	1.0395	0.0391	5.47931	0.0259
1056	6	2	234.08	0.00223	0.00215	1.1377	0.1317	0.00456	0.00453	1.0287	0.0285	5.48616	0.0762
1057	6	2	144.53	0.00125	0.00120	1.1941	0.1801	0.00678	0.00670	1.0439	0.0431	5.49929	0.0468
1058	6	2	1103.72	0.00528	0.00510	1.0899	0.0891	0.02299	0.02316	0.9879	0.0117	5.50053	0.1968
1059	6	2	499.27	0.00194	0.00186	1.1575	0.1488	0.00396	0.00392	1.0354	0.0349	5.49389	0.0652
1060	6	2	547.32	0.00247	0.00238	1.1445	0.1375	0.00504	0.00500	1.0298	0.0295	5.49425	0.0836
1061	6	2	490.83	0.00419	0.00405	1.1294	0.1243	0.00646	0.00644	1.0160	0.0160	5.49180	0.1409
1062	6	2	221.20	0.00054	0.00052	1.1502	0.1427	0.00627	0.00623	1.0372	0.0368	5.48522	0.0235
1063	6	2	51.69	0.00122	0.00117	1.2156	0.1983	0.00734	0.00725	1.0535	0.0524	5.49723	0.0461
1064	6	2	101.42	0.00025	0.00024	1.2138	0.1967	0.00630	0.00623	1.0535	0.0525	5.49720	0.0144
1065	6	2	81.86	0.00274	0.00263	1.2047	0.1893	0.00603	0.00595	1.0498	0.0489	5.49554	0.0933
1066	6	2	93.41	0.00097	0.00093	1.2058	0.1900	0.00735	0.00727	1.0466	0.0458	5.49915	0.0384
1067	6	2	135.36	0.00064	0.00062	1.1853	0.1728	0.00351	0.00347	1.0421	0.0415	5.49408	0.0239
1068	6	2	472.26	0.00336	0.00324	1.1270	0.1220	0.00751	0.00750	1.0221	0.0221	5.49423	0.1150
1069	6	2	172.39	0.00139	0.00134	1.1764	0.1652	0.00310	0.00306	1.0351	0.0346	5.49464	0.0477
1070	6	2	528.38	0.00346	0.00332	1.1138	0.1104	0.00809	0.00806	1.0252	0.0251	5.48303	0.1189
1071	6	2	523.23	0.00341	0.00327	1.1433	0.1367	0.00902	0.00901	1.0309	0.0307	5.49364	0.1153
1072	6	2	836.40	0.00799	0.00778	1.0334	0.0362	0.05109	0.05277	0.9677	0.0319	5.49896	0.3192
1073	6	2	190.88	0.00493	0.00474	1.1781	0.1670	0.00462	0.00457	1.0462	0.0454	5.48775	0.1627
1074	5	2	177.00	0.00475	0.00458	1.1368	0.1311	0.01229	0.01234	1.0177	0.0178	5.49591	0.1641
1075	5	2	145.54	0.00057	0.00055	1.1556	0.1471	0.00442	0.00437	1.0415	0.0409	5.48817	0.0228

Influence Diagnostics for Levels of ID

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1076	6	2	257.40	0.00091	0.00088	1.1695	0.1598	0.00350	0.00347	1.0381	0.0376	5.48802	0.0328
1077	6	2	177.88	0.00202	0.00195	1.1649	0.1553	0.00261	0.00258	1.0328	0.0325	5.49328	0.0675
1078	6	2	77.70	0.00022	0.00021	1.2069	0.1911	0.00585	0.00577	1.0514	0.0505	5.49506	0.0128
1079	6	2	213.86	0.00090	0.00087	1.1979	0.1834	0.00634	0.00627	1.0423	0.0417	5.49862	0.0352
1080	6	2	201.37	0.00184	0.00177	1.1391	0.1329	0.00357	0.00352	1.0249	0.0247	5.49025	0.0619
1081	6	2	630.77	0.00450	0.00430	1.0984	0.0967	0.00668	0.00668	1.0046	0.0048	5.48978	0.1533
1082	6	2	268.59	0.00678	0.00662	1.0653	0.0661	0.04101	0.04207	0.9793	0.0202	5.49714	0.2604
1083	6	2	419.46	0.00968	0.00950	1.0126	0.0158	0.06558	0.06831	0.9568	0.0429	5.49121	0.3814
1084	6	2	193.24	0.00331	0.00319	1.1700	0.1597	0.00547	0.00540	1.0442	0.0435	5.48812	0.1113
1085	5	2	405.05	0.00559	0.00538	1.1209	0.1165	0.00560	0.00559	1.0182	0.0182	5.49299	0.1846
1086	6	2	480.38	0.00145	0.00139	1.1315	0.1263	0.00443	0.00440	1.0242	0.0241	5.48683	0.0504
1087	6	2	633.15	0.00250	0.00241	1.0655	0.0661	0.04296	0.04346	1.0167	0.0169	5.46831	0.1235
1088	6	2	1025.27	0.00561	0.00544	1.0689	0.0690	0.01766	0.01789	0.9942	0.0056	5.48636	0.2001
1089	6	2	215.84	0.00324	0.00314	1.1487	0.1414	0.01378	0.01378	1.0161	0.0162	5.49938	0.1181
1090	6	2	175.60	0.00093	0.00088	1.1935	0.1801	0.00434	0.00428	1.0422	0.0416	5.49502	0.0337
1091	6	2	261.52	0.00005	0.00005	1.1434	0.1367	0.01285	0.01282	1.0410	0.0405	5.48110	0.0146
1092	6	2	126.87	0.00054	0.00052	1.1911	0.1778	0.00462	0.00455	1.0494	0.0485	5.49135	0.0218
1093	6	2	488.21	0.00597	0.00578	1.0769	0.0764	0.01332	0.01345	1.0033	0.0035	5.48829	0.2063
1094	6	2	657.83	0.00294	0.00282	1.1359	0.1307	0.00604	0.00603	1.0206	0.0205	5.48674	0.1011
1095	6	2	451.84	0.00531	0.00514	1.0680	0.0684	0.01746	0.01775	0.9904	0.0093	5.49095	0.1920
1096	5	2	362.79	0.00419	0.00403	1.1257	0.1208	0.00250	0.00247	1.0186	0.0186	5.49136	0.1364
1097	6	2	334.49	0.00078	0.00075	1.1523	0.1444	0.00400	0.00396	1.0355	0.0351	5.48763	0.0289
1098	6	2	214.90	0.00062	0.00059	1.1580	0.1495	0.00623	0.00619	1.0411	0.0406	5.48526	0.0261
1099	6	3	3026.89	0.03769	0.03938	0.5701	0.5343	1.24555	1.50354	0.7268	0.2937	5.44437	2.7249

Influence Diagnostics for Levels of ID

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1100	6	2	381.40	0.00160	0.00154	1.1657	0.1560	0.00332	0.00328	1.0328	0.0324	5.49509	0.0545
1101	6	2	464.70	0.00429	0.00417	1.1033	0.1009	0.01634	0.01655	0.9986	0.0011	5.49334	0.1551
1102	6	2	184.00	0.00194	0.00186	1.1922	0.1796	0.00405	0.00401	1.0455	0.0448	5.48860	0.0663
1103	6	2	1159.80	0.00472	0.00457	1.0520	0.0532	0.02119	0.02138	0.9979	0.0018	5.48333	0.1720
1104	6	2	454.59	0.00253	0.00244	1.0992	0.0973	0.02441	0.02456	1.0272	0.0271	5.47463	0.1058
1105	6	2	157.46	0.00292	0.00282	1.1551	0.1468	0.00540	0.00537	1.0270	0.0268	5.49592	0.0996
1106	6	2	130.05	0.00259	0.00250	1.1947	0.1811	0.00484	0.00477	1.0484	0.0476	5.49133	0.0878
1107	6	2	1166.61	0.00486	0.00471	1.0562	0.0571	0.01540	0.01558	0.9907	0.0090	5.48726	0.1745
1108	6	2	187.81	0.00096	0.00092	1.2024	0.1873	0.00472	0.00466	1.0471	0.0463	5.49614	0.0357
1109	6	2	350.31	0.00101	0.00099	1.0438	0.0437	0.01096	0.01096	1.0173	0.0173	5.48145	0.0436
1110	5	2	216.37	0.00133	0.00131	1.1026	0.0984	0.00347	0.00344	1.0360	0.0355	5.49543	0.0460
1111	6	2	212.33	0.00062	0.00061	1.1400	0.1322	0.00806	0.00796	1.0408	0.0402	5.49993	0.0276
1112	6	2	28.12	0.00002	0.00002	1.1767	0.1645	0.00918	0.00907	1.0555	0.0544	5.49912	0.0097
1113	6	2	1034.28	0.00824	0.00844	0.8132	0.1994	0.27879	0.30675	0.8780	0.1240	5.49986	0.5731
1114	6	2	329.75	0.00074	0.00073	1.1176	0.1121	0.00456	0.00451	1.0404	0.0398	5.49667	0.0282
1115	5	2	339.27	0.00094	0.00093	1.0964	0.0928	0.00553	0.00548	1.0259	0.0257	5.49770	0.0357
1116	6	2	238.10	0.00085	0.00083	1.1496	0.1406	0.00755	0.00747	1.0472	0.0463	5.49983	0.0352
1117	6	2	189.70	0.00081	0.00079	1.1057	0.1013	0.00325	0.00320	1.0373	0.0368	5.49334	0.0288
1118	5	2	95.37	0.00051	0.00050	1.1212	0.1152	0.00526	0.00521	1.0400	0.0395	5.49775	0.0214
1119	5	2	314.37	0.00194	0.00191	1.0583	0.0574	0.00530	0.00529	1.0190	0.0189	5.49284	0.0679
1120	6	2	167.88	0.00126	0.00124	1.0950	0.0917	0.00372	0.00367	1.0291	0.0289	5.49395	0.0432
1121	6	2	547.44	0.00168	0.00166	1.0828	0.0805	0.01176	0.01172	1.0129	0.0130	5.49894	0.0658
1122	6	2	823.76	0.00168	0.00165	1.0302	0.0305	0.00680	0.00679	1.0070	0.0071	5.48692	0.0616
1123	6	2	251.40	0.00167	0.00163	1.1149	0.1099	0.00707	0.00701	1.0356	0.0352	5.49765	0.0601

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1124	6	2	914.20	0.00393	0.00382	1.0298	0.0308	0.01297	0.01303	0.9870	0.0126	5.49612	0.1415
1125	6	2	238.80	0.00278	0.00273	1.0762	0.0743	0.00840	0.00840	1.0145	0.0146	5.49559	0.0977
1126	5	2	15.61	0.00023	0.00023	1.1415	0.1332	0.00762	0.00753	1.0516	0.0506	5.49782	0.0149
1127	6	2	1117.56	0.00292	0.00289	0.9930	0.0059	0.02376	0.02420	0.9812	0.0185	5.49524	0.1220
1128	6	2	640.26	0.00286	0.00283	1.0331	0.0336	0.01941	0.01973	0.9941	0.0056	5.49256	0.1122
1129	6	2	314.36	0.00163	0.00160	1.0899	0.0870	0.00544	0.00540	1.0381	0.0376	5.48605	0.0577
1130	5	2	245.74	0.00126	0.00124	1.0848	0.0821	0.00745	0.00741	1.0252	0.0250	5.49830	0.0483
1131	6	2	370.17	0.00087	0.00085	1.1084	0.1037	0.00446	0.00441	1.0359	0.0354	5.49628	0.0321
1132	6	2	118.49	0.00098	0.00095	1.1321	0.1255	0.00453	0.00448	1.0402	0.0396	5.49652	0.0359
1133	6	2	508.82	0.00127	0.00125	1.0801	0.0778	0.00337	0.00333	1.0289	0.0286	5.49093	0.0439
1134	6	2	702.01	0.00283	0.00275	1.0690	0.0680	0.00720	0.00717	1.0064	0.0067	5.49629	0.0979
1135	5	2	78.05	0.00011	0.00011	1.1233	0.1171	0.00501	0.00494	1.0476	0.0468	5.49322	0.0082
1136	6	2	958.86	0.00439	0.00434	0.9629	0.0363	0.03419	0.03505	0.9653	0.0346	5.49298	0.1800
1137	6	2	133.70	0.00115	0.00112	1.1236	0.1175	0.00419	0.00413	1.0484	0.0476	5.49139	0.0409
1138	6	2	346.22	0.00073	0.00072	1.1100	0.1053	0.00463	0.00458	1.0330	0.0326	5.49690	0.0281
1139	6	2	495.50	0.00115	0.00112	1.0705	0.0689	0.00291	0.00288	1.0203	0.0202	5.49205	0.0397
1140	6	2	75.54	0.00012	0.00012	1.1522	0.1427	0.00820	0.00811	1.0534	0.0524	5.49900	0.0121
1141	6	2	248.40	0.00124	0.00122	1.1079	0.1034	0.01200	0.01191	1.0262	0.0261	5.50107	0.0519
1142	6	2	106.81	0.00036	0.00035	1.1426	0.1343	0.00655	0.00647	1.0499	0.0490	5.49782	0.0179
1143	6	2	172.06	0.00088	0.00087	1.1301	0.1232	0.00510	0.00504	1.0417	0.0411	5.49723	0.0333
1144	6	2	183.64	0.00088	0.00086	1.1124	0.1075	0.00358	0.00353	1.0376	0.0371	5.49478	0.0316
1145	6	2	35.66	0.00051	0.00050	1.1517	0.1422	0.00855	0.00846	1.0509	0.0499	5.49978	0.0250
1146	6	2	2554.56	0.00573	0.00581	0.8780	0.1265	0.13309	0.14232	0.9198	0.0808	5.49487	0.3394
1147	6	2	714.65	0.00447	0.00452	0.9211	0.0796	0.10099	0.10665	0.9373	0.0628	5.48620	0.2529

Influence Diagnostics for Levels of ID

ID	Number of Observations in Level	Iterations	PRESS Statistic	Cook's D	MDFFITS	COVRATIO	COVTRACE	Cook's D CovParms	MDFFITS CovParms	COVRATIO CovParms	COVTRACE CovParms	RMSE without deleted level	Restricted Likelihood Distance
1148	5	2	244.89	0.00078	0.00076	1.1041	0.0998	0.00249	0.00246	1.0383	0.0377	5.49248	0.0275
1150	6	2	437.41	0.00152	0.00148	1.1075	0.1033	0.00775	0.00767	1.0244	0.0244	5.49936	0.0558
1151	6	2	192.53	0.00042	0.00041	1.1158	0.1105	0.00307	0.00303	1.0407	0.0401	5.49296	0.0163
1152	6	2	55.28	0.00026	0.00025	1.1516	0.1423	0.00738	0.00728	1.0525	0.0515	5.49735	0.0155
1153	6	2	982.16	0.00746	0.00730	0.9644	0.0342	0.04741	0.04898	0.9550	0.0450	5.49635	0.3024
1154	6	2	269.86	0.00296	0.00295	1.0203	0.0215	0.03767	0.03862	0.9856	0.0139	5.49686	0.1337
1155	5	2	161.95	0.00093	0.00091	1.0769	0.0748	0.00320	0.00316	1.0263	0.0261	5.49182	0.0326
1157	6	2	33.18	0.00012	0.00011	1.1675	0.1562	0.00940	0.00929	1.0571	0.0558	5.49978	0.0132
1158	6	2	187.52	0.00227	0.00222	1.1184	0.1128	0.00325	0.00321	1.0445	0.0438	5.49241	0.0757
1159	6	2	384.61	0.00189	0.00187	1.0578	0.0570	0.01024	0.01030	1.0098	0.0099	5.49310	0.0713
1160	6	2	973.33	0.00320	0.00315	1.0279	0.0284	0.01063	0.01071	0.9979	0.0018	5.49251	0.1152
1161	5	2	120.23	0.00154	0.00152	1.0849	0.0823	0.00702	0.00700	1.0220	0.0219	5.49685	0.0568
1162	6	2	352.36	0.00080	0.00078	1.0914	0.0882	0.00365	0.00361	1.0384	0.0378	5.48793	0.0292
1163	6	2	333.21	0.00295	0.00292	1.0215	0.0225	0.02397	0.02429	0.9894	0.0102	5.49658	0.1185
1164	6	2	1166.10	0.00366	0.00363	0.9580	0.0416	0.03228	0.03312	0.9704	0.0295	5.49056	0.1546
1165	6	2	344.65	0.00166	0.00162	1.0954	0.0919	0.00393	0.00389	1.0363	0.0358	5.49425	0.0564
1166	6	2	368.50	0.00149	0.00145	1.0957	0.0928	0.01053	0.01051	1.0439	0.0433	5.48162	0.0581
1167	6	2	178.21	0.00026	0.00025	1.1052	0.1011	0.00500	0.00494	1.0408	0.0403	5.48871	0.0127
1168	5	2	71.55	0.00086	0.00084	1.1306	0.1238	0.00478	0.00471	1.0485	0.0477	5.49364	0.0322
1169	6	2	209.56	0.00036	0.00035	1.0976	0.0941	0.00542	0.00537	1.0408	0.0403	5.48670	0.0169
1170	6	2	392.82	0.00115	0.00113	1.1095	0.1048	0.00808	0.00800	1.0327	0.0323	5.49927	0.0448
1171	6	2	272.68	0.00076	0.00074	1.1264	0.1199	0.00822	0.00813	1.0399	0.0393	5.50022	0.0324
1172	6	2	79.00	0.00074	0.00073	1.1410	0.1329	0.00711	0.00703	1.0480	0.0472	5.49870	0.0308
1173	6	2	137.73	0.00079	0.00077	1.1122	0.1073	0.00372	0.00368	1.0348	0.0344	5.49539	0.0290

Influence Diagnostics for Levels of ID

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1174	6	2	477.37	0.00236	0.00236	1.0091	0.0101	0.02471	0.02521	0.9868	0.0129	5.48892	0.1020
1175	5	2	1149.88	0.00624	0.00630	0.8602	0.1470	0.13193	0.14108	0.9234	0.0769	5.48978	0.3490
1176	6	2	234.62	0.00031	0.00031	1.1133	0.1082	0.00342	0.00338	1.0430	0.0424	5.49196	0.0134
1177	5	2	37.73	0.00013	0.00013	1.1451	0.1365	0.00821	0.00812	1.0500	0.0491	5.49884	0.0124
1178	5	2	94.07	0.00029	0.00028	1.1367	0.1297	0.00489	0.00482	1.0469	0.0462	5.49155	0.0139
1179	6	2	1178.49	0.00257	0.00254	0.9979	0.0011	0.01716	0.01740	0.9849	0.0149	5.48965	0.1025
1180	6	2	1082.10	0.00473	0.00465	0.9800	0.0187	0.03189	0.03271	0.9728	0.0269	5.49411	0.1919
1181	6	2	624.47	0.00165	0.00163	1.0668	0.0654	0.00613	0.00612	1.0153	0.0153	5.49331	0.0599
1182	5	2	178.41	0.00083	0.00082	1.1161	0.1108	0.00482	0.00476	1.0353	0.0349	5.49668	0.0311
1183	6	2	426.10	0.00093	0.00091	1.0808	0.0785	0.00276	0.00273	1.0310	0.0307	5.48920	0.0326
1184	6	2	163.75	0.00137	0.00134	1.1114	0.1065	0.00539	0.00532	1.0461	0.0453	5.48893	0.0490
1185	6	2	88.87	0.00072	0.00070	1.1249	0.1188	0.00552	0.00545	1.0375	0.0371	5.49714	0.0277
1186	5	2	192.82	0.00059	0.00057	1.1156	0.1102	0.00378	0.00374	1.0409	0.0403	5.49543	0.0227
1187	6	2	107.98	0.00003	0.00003	1.1377	0.1303	0.00488	0.00481	1.0496	0.0488	5.49287	0.0058
1188	6	2	409.76	0.00179	0.00175	1.0805	0.0783	0.00437	0.00433	1.0320	0.0317	5.49213	0.0606
1189	6	2	703.72	0.00246	0.00243	1.0236	0.0244	0.01876	0.01894	0.9953	0.0044	5.49742	0.0992
1190	6	2	929.69	0.00319	0.00313	1.0558	0.0554	0.01417	0.01425	1.0195	0.0197	5.49022	0.1131
1191	6	2	918.80	0.00339	0.00334	1.0351	0.0353	0.01218	0.01229	0.9998	0.0000	5.49349	0.1225
1192	6	2	90.04	0.00055	0.00054	1.1331	0.1260	0.00429	0.00425	1.0451	0.0443	5.49668	0.0221
1193	6	2	47.62	0.00024	0.00024	1.1573	0.1474	0.00776	0.00766	1.0517	0.0507	5.49778	0.0152
1194	6	2	378.34	0.00230	0.00226	1.0506	0.0503	0.02555	0.02569	1.0345	0.0343	5.47451	0.0996
1195	6	2	962.25	0.00269	0.00264	1.0382	0.0384	0.01133	0.01142	1.0095	0.0097	5.49051	0.0984
1196	6	2	622.03	0.00161	0.00158	1.0797	0.0776	0.00922	0.00917	1.0218	0.0217	5.49810	0.0607
1197	6	2	99.46	0.00018	0.00017	1.1462	0.1375	0.00742	0.00734	1.0505	0.0496	5.49824	0.0129

Influence Diagnostics for Levels of ID

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1198	6	2	357.77	0.00164	0.00162	1.0838	0.0814	0.00477	0.00473	1.0225	0.0224	5.49339	0.0574
1199	6	2	220.95	0.00117	0.00115	1.1075	0.1030	0.00671	0.00664	1.0288	0.0286	5.49827	0.0443
1200	6	2	1627.22	0.00361	0.00361	0.9803	0.0182	0.05385	0.05567	0.9692	0.0303	5.49942	0.1774
1201	6	2	1557.88	0.00530	0.00535	0.9578	0.0396	0.12842	0.13648	0.9404	0.0589	5.50009	0.3109
1202	6	2	165.12	0.00124	0.00121	1.0853	0.0827	0.00460	0.00457	1.0224	0.0223	5.49500	0.0447
1203	6	2	858.79	0.00230	0.00226	1.0582	0.0576	0.01384	0.01395	1.0161	0.0162	5.49308	0.0858
1204	6	2	113.73	0.00140	0.00138	1.0900	0.0871	0.01217	0.01209	1.0192	0.0193	5.50002	0.0562
1205	6	2	186.12	0.00061	0.00060	1.1349	0.1275	0.00763	0.00754	1.0434	0.0427	5.49959	0.0270
1206	6	2	648.63	0.00396	0.00390	1.0587	0.0581	0.01133	0.01142	1.0126	0.0127	5.49178	0.1385
1207	6	2	184.25	0.00079	0.00077	1.1346	0.1273	0.00531	0.00525	1.0444	0.0437	5.49675	0.0303
1208	6	2	442.48	0.00090	0.00088	1.0845	0.0819	0.00277	0.00273	1.0314	0.0311	5.49115	0.0316
1209	5	2	58.42	0.00018	0.00017	1.1339	0.1267	0.00534	0.00527	1.0505	0.0496	5.49477	0.0110
1210	6	2	353.34	0.00103	0.00101	1.1018	0.0979	0.00396	0.00392	1.0304	0.0302	5.49555	0.0365
1211	5	2	260.15	0.00212	0.00209	1.0360	0.0361	0.00972	0.00979	1.0094	0.0095	5.48965	0.0783
1212	6	2	104.98	0.00058	0.00057	1.1305	0.1238	0.00393	0.00388	1.0433	0.0426	5.49575	0.0227
1213	6	2	271.03	0.00084	0.00082	1.1043	0.1001	0.00316	0.00312	1.0433	0.0427	5.49023	0.0300
1214	6	2	316.40	0.00349	0.00343	1.0845	0.0819	0.00358	0.00354	1.0343	0.0339	5.48837	0.1153
1215	6	2	152.18	0.00103	0.00101	1.0969	0.0933	0.00469	0.00465	1.0283	0.0281	5.49656	0.0381
1216	6	2	308.84	0.00025	0.00024	1.0890	0.0863	0.00958	0.00955	1.0427	0.0421	5.48258	0.0178
1217	6	2	77.01	0.00076	0.00074	1.1379	0.1306	0.00618	0.00611	1.0370	0.0366	5.49836	0.0304
1218	6	2	496.25	0.00748	0.00710	1.2247	0.2081	0.00873	0.00847	1.0736	0.0721	5.48689	0.2485
1219	6	2	649.04	0.00334	0.00318	1.2786	0.2520	0.01445	0.01401	1.0788	0.0772	5.49929	0.1192
1220	6	2	526.66	0.00328	0.00311	1.1758	0.1673	0.02337	0.02323	1.0674	0.0664	5.47670	0.1285
1221	6	2	720.73	0.00573	0.00544	1.2285	0.2114	0.00967	0.00935	1.0649	0.0640	5.49385	0.1928

Influence Diagnostics for Levels of ID

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1222	6	2	578.26	0.01415	0.01342	1.2166	0.2015	0.01026	0.01006	1.0746	0.0731	5.48390	0.4656
1223	6	2	690.36	0.01524	0.01523	0.8456	0.1511	0.21385	0.24492	0.8646	0.1339	5.49332	0.7509
1224	5	2	1630.69	0.00861	0.00834	1.0150	0.0213	0.05203	0.05512	0.9633	0.0352	5.49125	0.3405
1225	6	2	728.71	0.00930	0.00906	0.9809	0.0109	0.07559	0.08002	0.9582	0.0394	5.48679	0.3784
1226	5	2	1155.20	0.00932	0.00896	1.0956	0.0962	0.02378	0.02429	1.0061	0.0073	5.49043	0.3289
1227	6	2	530.13	0.00341	0.00323	1.2577	0.2353	0.01105	0.01073	1.0904	0.0881	5.48490	0.1190
1228	6	2	696.72	0.00816	0.00776	1.2185	0.2031	0.01140	0.01108	1.0717	0.0705	5.48502	0.2722
1229	6	2	312.03	0.00775	0.00735	1.2872	0.2586	0.01319	0.01283	1.1091	0.1055	5.48454	0.2603
1230	6	2	2457.83	0.01095	0.01083	0.8878	0.1092	0.13530	0.14560	0.9148	0.0836	5.47360	0.5092
1231	5	2	277.09	0.00398	0.00383	1.1016	0.1009	0.01400	0.01406	1.0120	0.0133	5.49104	0.1466
1232	6	2	1495.36	0.02264	0.02166	1.0650	0.0687	0.06142	0.06203	1.0154	0.0167	5.46833	0.7921
1233	5	2	558.88	0.00570	0.00539	1.2047	0.1921	0.01294	0.01260	1.0463	0.0464	5.49457	0.1966
1234	6	2	165.33	0.00268	0.00253	1.3516	0.3082	0.01176	0.01132	1.1225	0.1177	5.49302	0.0957
1235	6	2	1321.99	0.00867	0.00829	1.0901	0.0922	0.04386	0.04396	1.0234	0.0244	5.47425	0.3216
1236	5	2	666.27	0.00483	0.00465	1.1764	0.1674	0.01296	0.01278	1.0382	0.0384	5.49225	0.1684
1237	6	2	1084.27	0.00976	0.00946	1.0222	0.0283	0.05847	0.06045	0.9762	0.0220	5.47882	0.3807
1238	6	2	359.91	0.00647	0.00584	1.4680	0.4014	0.01098	0.01068	1.0852	0.0829	5.49902	0.2182
1239	6	2	556.22	0.02020	0.01845	1.2516	0.2397	0.03754	0.03765	1.0276	0.0282	5.47259	0.6924
1240	6	2	701.88	0.00845	0.00769	1.4231	0.3693	0.01277	0.01244	1.0715	0.0702	5.49831	0.2831
1241	4	2	91.35	0.00347	0.00320	1.4626	0.3948	0.00976	0.00941	1.1146	0.1104	5.49306	0.1202
1242	6	2	244.24	0.00462	0.00416	1.4968	0.4213	0.00910	0.00883	1.1050	0.1012	5.49720	0.1570
1243	6	2	729.92	0.00908	0.00830	1.3244	0.2971	0.02120	0.02121	1.0409	0.0411	5.49585	0.3114
1244	6	2	147.56	0.00017	0.00016	1.5359	0.4478	0.01349	0.01298	1.1288	0.1236	5.48982	0.0185
1245	6	2	168.81	0.00530	0.00480	1.4575	0.3945	0.01140	0.01110	1.0709	0.0696	5.49895	0.1819

Influence Diagnostics for Levels of ID

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1246	6	2	292.12	0.00493	0.00445	1.4455	0.3860	0.01549	0.01514	1.0832	0.0810	5.50038	0.1712
1247	6	2	653.41	0.00571	0.00519	1.4332	0.3768	0.00881	0.00844	1.0844	0.0824	5.49005	0.1897
1248	6	2	870.55	0.01559	0.01392	1.3433	0.3152	0.02233	0.02240	1.0196	0.0207	5.49548	0.5348
1249	6	2	481.67	0.01880	0.01691	1.3145	0.2939	0.02279	0.02281	1.0112	0.0123	5.48188	0.6367
1250	6	2	149.37	0.00535	0.00480	1.5839	0.4823	0.01269	0.01221	1.1262	0.1211	5.49039	0.1838
1251	6	2	440.28	0.00274	0.00245	1.5264	0.4440	0.00751	0.00722	1.0983	0.0953	5.49250	0.0945
1252	5	2	207.62	0.00545	0.00498	1.4785	0.4096	0.00770	0.00744	1.0938	0.0912	5.49193	0.1806
1253	6	2	378.49	0.01443	0.01342	1.2378	0.2332	0.06285	0.06601	0.9671	0.0305	5.50004	0.5540
1254	6	2	242.25	0.00656	0.00592	1.4312	0.3777	0.00939	0.00910	1.0698	0.0685	5.49310	0.2191
1255	6	2	492.16	0.00452	0.00409	1.4717	0.4067	0.00783	0.00753	1.0728	0.0713	5.49229	0.1525
1256	6	2	318.56	0.01557	0.01398	1.4722	0.4069	0.01157	0.01131	1.0938	0.0911	5.48412	0.5099
1257	6	2	657.97	0.01592	0.01435	1.3521	0.3205	0.01940	0.01920	1.0504	0.0501	5.47954	0.5323
1258	6	2	230.99	0.00228	0.00203	1.5309	0.4470	0.00815	0.00785	1.1049	0.1014	5.49174	0.0803
1259	6	2	200.64	0.00529	0.00502	1.2617	0.2380	0.00702	0.00675	1.0913	0.0887	5.49178	0.1760
1260	6	2	865.92	0.01247	0.01210	1.0152	0.0226	0.06837	0.07229	0.9632	0.0345	5.48843	0.4784
1261	6	2	152.65	0.00227	0.00215	1.3577	0.3127	0.01324	0.01276	1.1267	0.1216	5.49453	0.0843
1262	6	2	1547.24	0.00778	0.00753	1.0984	0.1006	0.04516	0.04623	1.0004	0.0027	5.49381	0.2956
1263	6	2	440.09	0.00647	0.00616	1.2401	0.2208	0.00965	0.00941	1.0877	0.0855	5.48506	0.2172
1264	6	2	670.55	0.01039	0.00989	1.1651	0.1580	0.01432	0.01411	1.0596	0.0588	5.48333	0.3468
1265	6	2	573.03	0.01701	0.01624	1.2251	0.2088	0.02581	0.02567	1.0897	0.0875	5.47590	0.5730
1266	6	2	612.99	0.00934	0.00898	1.1066	0.1069	0.02850	0.02894	1.0062	0.0076	5.48918	0.3325
1267	6	2	1421.86	0.01924	0.01842	1.0780	0.0802	0.03298	0.03331	1.0120	0.0130	5.47825	0.6559
1268	6	2	199.25	0.00411	0.00391	1.2130	0.1988	0.01701	0.01676	1.0581	0.0574	5.49924	0.1485
1269	6	2	1109.15	0.02166	0.02085	1.0175	0.0228	0.10439	0.10621	0.9999	0.0013	5.45795	0.8082

Influence Diagnostics for Levels of ID

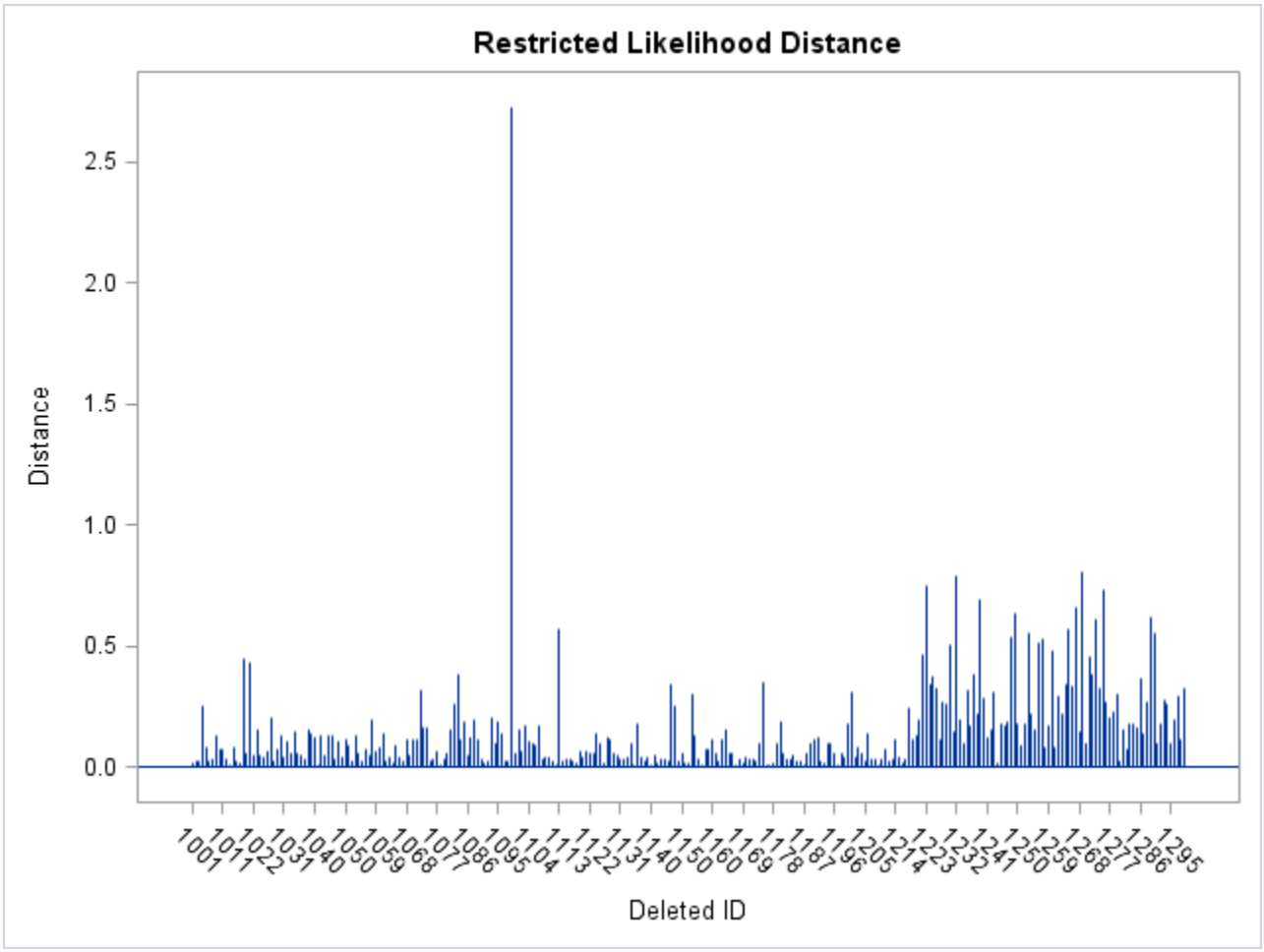
ID	Number of Observations in Level	Iterations	PRESS Statistic	Cook's D	MDFFITS	COVRATIO	COVTRACE	Cook's D CovParms	MDFFITS CovParms	COVRATIO CovParms	COVTRACE CovParms	RMSE without deleted level	Restricted Likelihood Distance
1270	6	2	244.50	0.00274	0.00259	1.3405	0.2993	0.01177	0.01142	1.1156	0.1112	5.49772	0.0988
1271	6	2	2144.70	0.01073	0.01044	0.9420	0.0530	0.10224	0.10611	0.9515	0.0469	5.46722	0.4600
1272	6	2	590.22	0.00809	0.00805	0.9375	0.0556	0.09572	0.10366	0.9253	0.0727	5.48706	0.3844
1273	6	2	1718.43	0.01658	0.01593	1.0225	0.0289	0.07846	0.07940	0.9923	0.0056	5.46813	0.6124
1274	6	2	1226.89	0.00789	0.00759	1.0212	0.0264	0.06566	0.06641	0.9990	0.0004	5.46795	0.3248
1275	6	2	802.50	0.02076	0.01991	1.0803	0.0823	0.06097	0.06151	1.0323	0.0328	5.46590	0.7321
1276	6	2	558.28	0.00770	0.00740	1.1341	0.1311	0.02210	0.02226	1.0259	0.0268	5.49143	0.2711
1277	6	2	471.08	0.00575	0.00549	1.1399	0.1360	0.01628	0.01608	1.0428	0.0429	5.48548	0.2008
1278	6	2	287.04	0.00647	0.00617	1.2961	0.2663	0.02531	0.02486	1.1196	0.1153	5.47883	0.2330
1279	6	2	1121.32	0.00788	0.00764	1.0635	0.0675	0.04387	0.04531	0.9942	0.0039	5.49569	0.3019
1280	6	2	177.29	0.00046	0.00044	1.3015	0.2691	0.00995	0.00959	1.1171	0.1127	5.49001	0.0249
1281	6	2	286.03	0.00450	0.00428	1.2540	0.2320	0.00889	0.00860	1.0885	0.0862	5.48702	0.1525
1282	4	2	234.10	0.00214	0.00205	1.1971	0.1836	0.00822	0.00801	1.0714	0.0699	5.49610	0.0771
1283	6	2	981.84	0.00506	0.00486	1.1599	0.1536	0.02118	0.02102	1.0363	0.0369	5.49602	0.1836
1284	6	2	499.64	0.00548	0.00522	1.2370	0.2177	0.00799	0.00771	1.0778	0.0761	5.49336	0.1832
1285	6	2	981.66	0.00438	0.00421	1.1746	0.1660	0.01965	0.01947	1.0429	0.0432	5.49733	0.1603
1286	6	2	368.18	0.00937	0.00904	1.0593	0.0660	0.06785	0.07102	0.9838	0.0137	5.49836	0.3690
1287	6	2	584.24	0.00412	0.00391	1.2434	0.2230	0.00741	0.00723	1.0778	0.0758	5.49638	0.1405
1288	6	2	1088.79	0.00659	0.00646	1.0699	0.0744	0.05205	0.05431	0.9764	0.0214	5.49331	0.2706
1289	6	2	852.49	0.01627	0.01576	0.9730	0.0194	0.08317	0.08767	0.9405	0.0576	5.47921	0.6229
1290	6	2	2642.17	0.01166	0.01164	0.9007	0.0930	0.14855	0.16546	0.8989	0.0990	5.49189	0.5543
1291	6	2	417.20	0.00285	0.00274	1.1829	0.1728	0.01065	0.01043	1.0522	0.0518	5.49083	0.1029
1292	6	2	644.62	0.00492	0.00471	1.1731	0.1664	0.01929	0.01903	1.0344	0.0349	5.48332	0.1771
1293	6	2	419.73	0.00809	0.00772	1.2311	0.2132	0.02056	0.02032	1.0935	0.0910	5.47877	0.2795

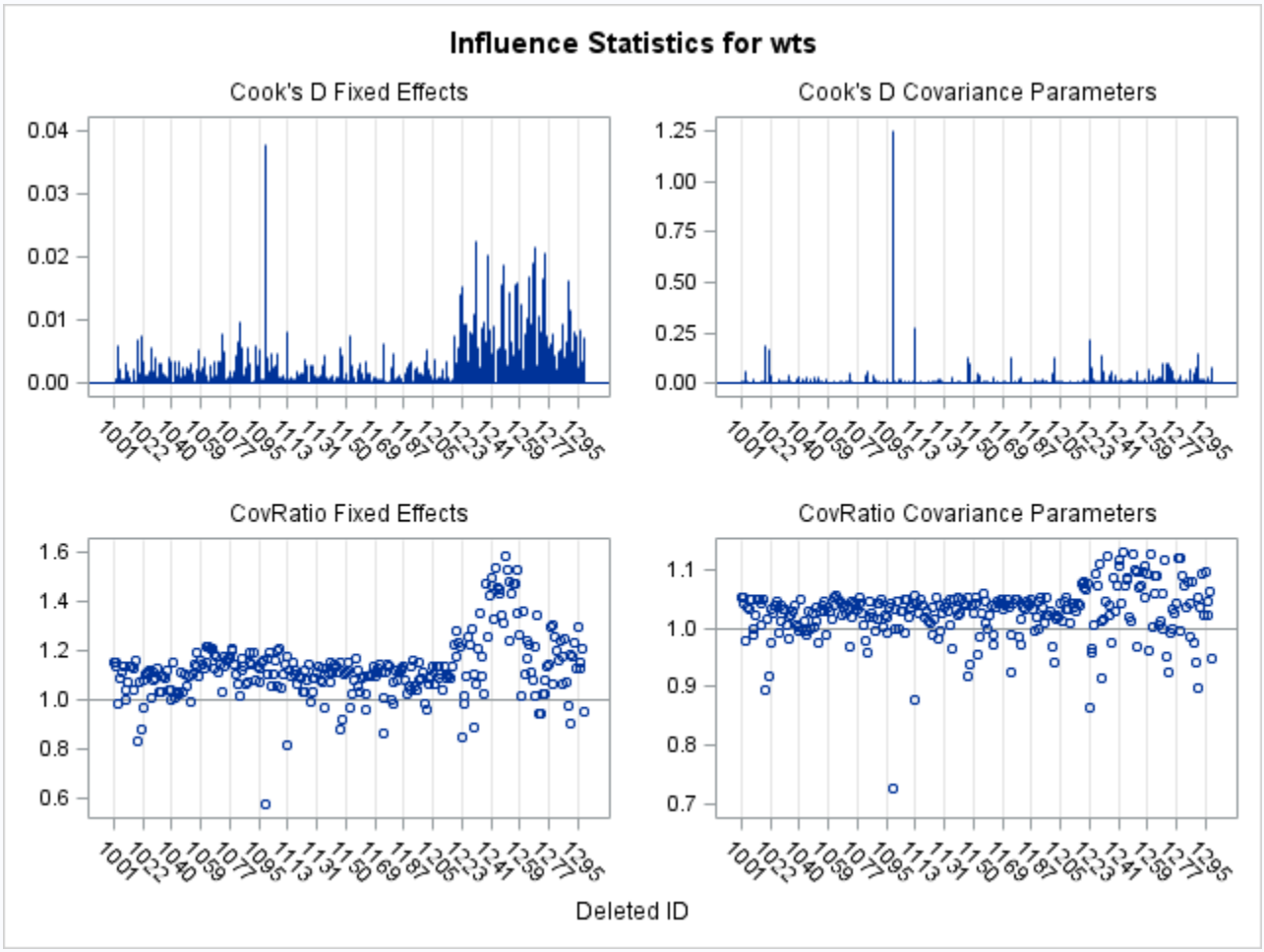
Influence Diagnostics for Levels of ID

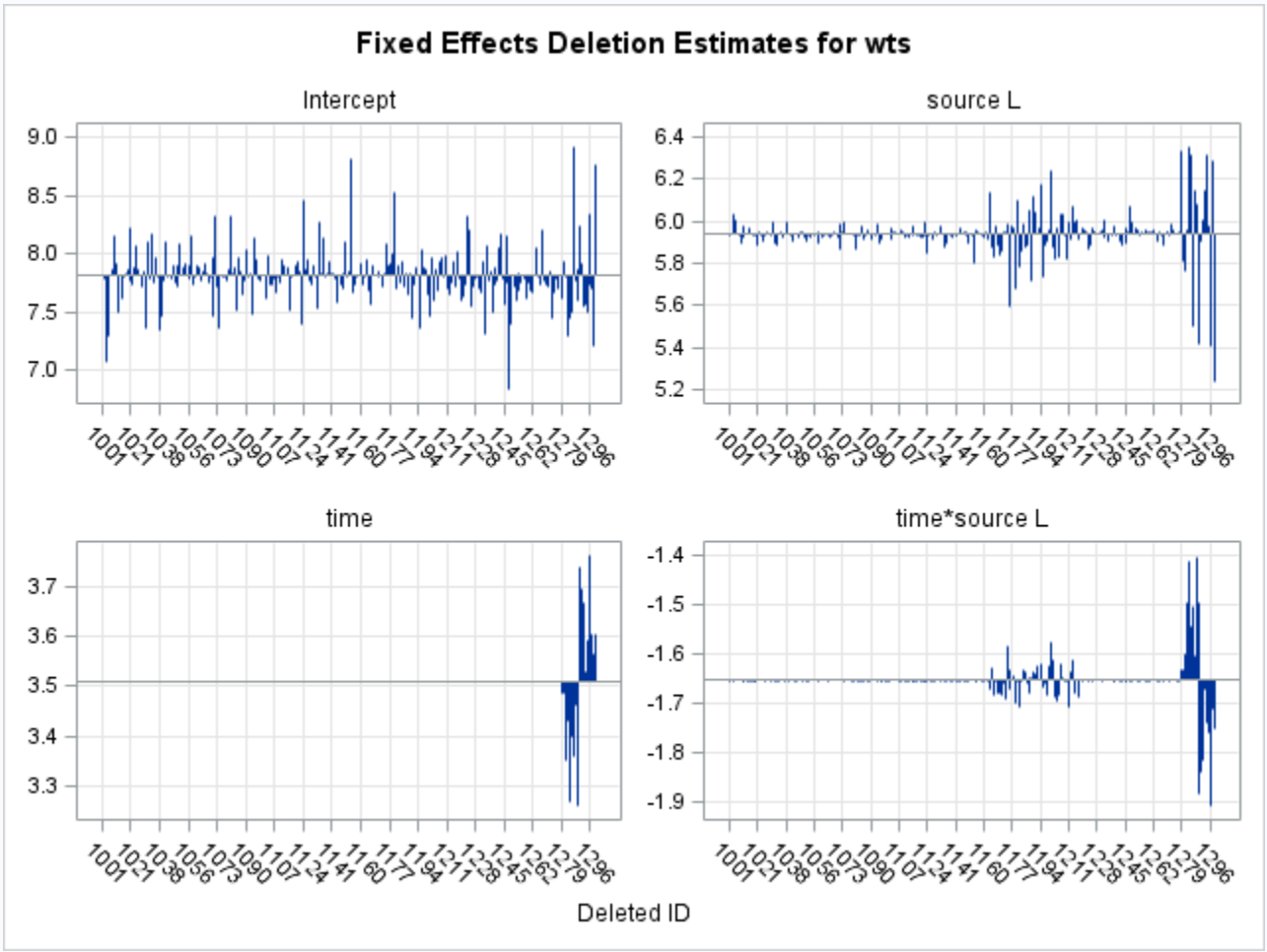
ID	Number of Observations in Level	Iterations	PRESS Statistic	Cook's D	MDFFITS	COVRATIO	COVTRACE	Cook's D CovParms	MDFFITS CovParms	COVRATIO CovParms	COVTRACE CovParms	RMSE without deleted level	Restricted Likelihood Distance
1294	6	2	313.92	0.00746	0.00716	1.1278	0.1252	0.02009	0.02021	1.0231	0.0239	5.49377	0.2643
1295	6	2	243.39	0.00269	0.00256	1.2912	0.2609	0.01057	0.01028	1.0963	0.0933	5.49874	0.0965
1296	6	2	1258.44	0.00529	0.00511	1.1282	0.1260	0.02564	0.02579	1.0227	0.0239	5.49147	0.1962
1297	6	2	1131.73	0.00841	0.00805	1.1473	0.1435	0.03214	0.03169	1.0466	0.0471	5.47734	0.2975
1298	6	2	264.26	0.00337	0.00320	1.2092	0.1952	0.00908	0.00881	1.0631	0.0622	5.49284	0.1179
1299	6	2	1615.33	0.00735	0.00725	0.9521	0.0414	0.08191	0.08690	0.9494	0.0483	5.48371	0.3305

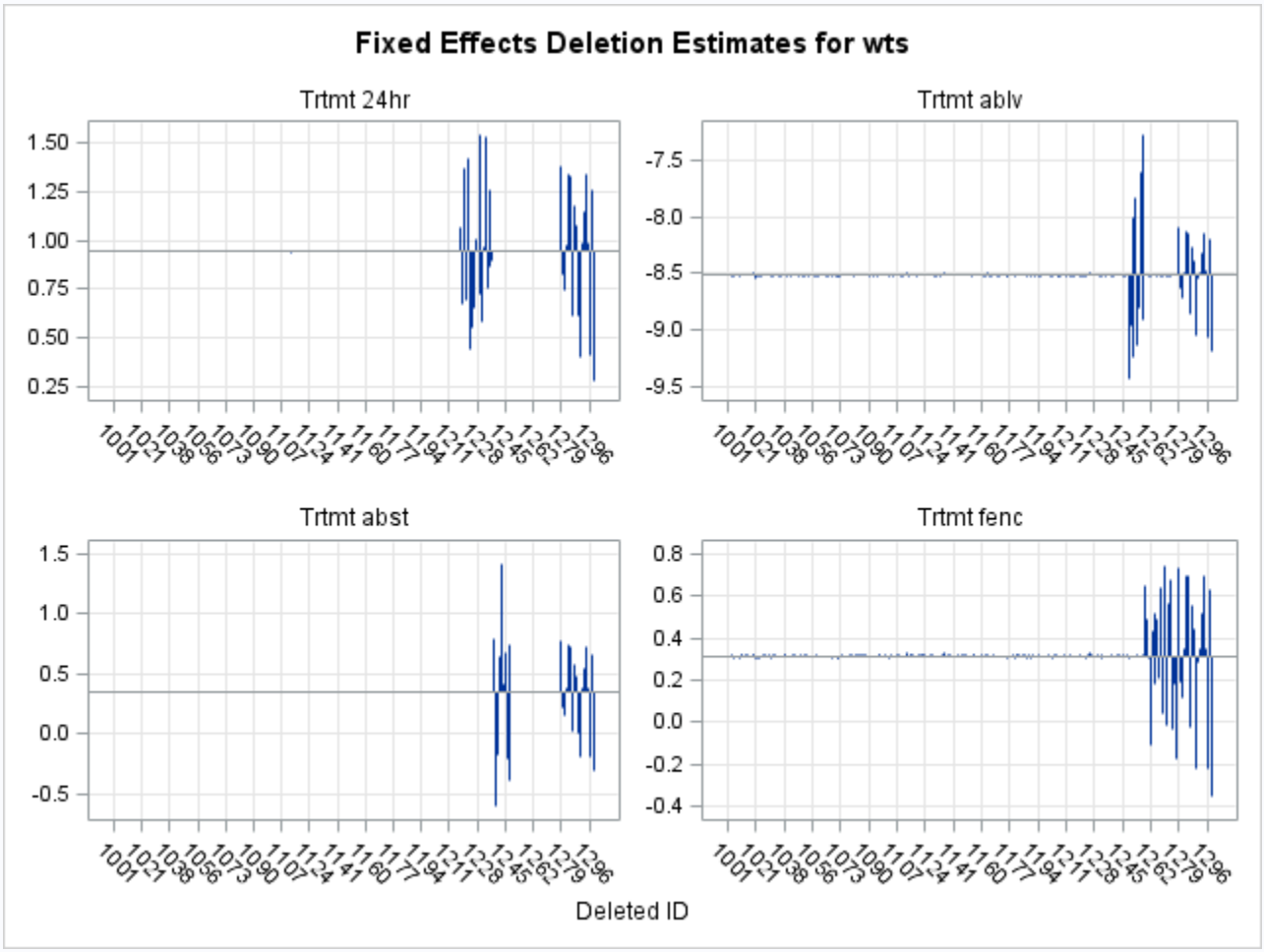
all calves Time*time interactions no outpred

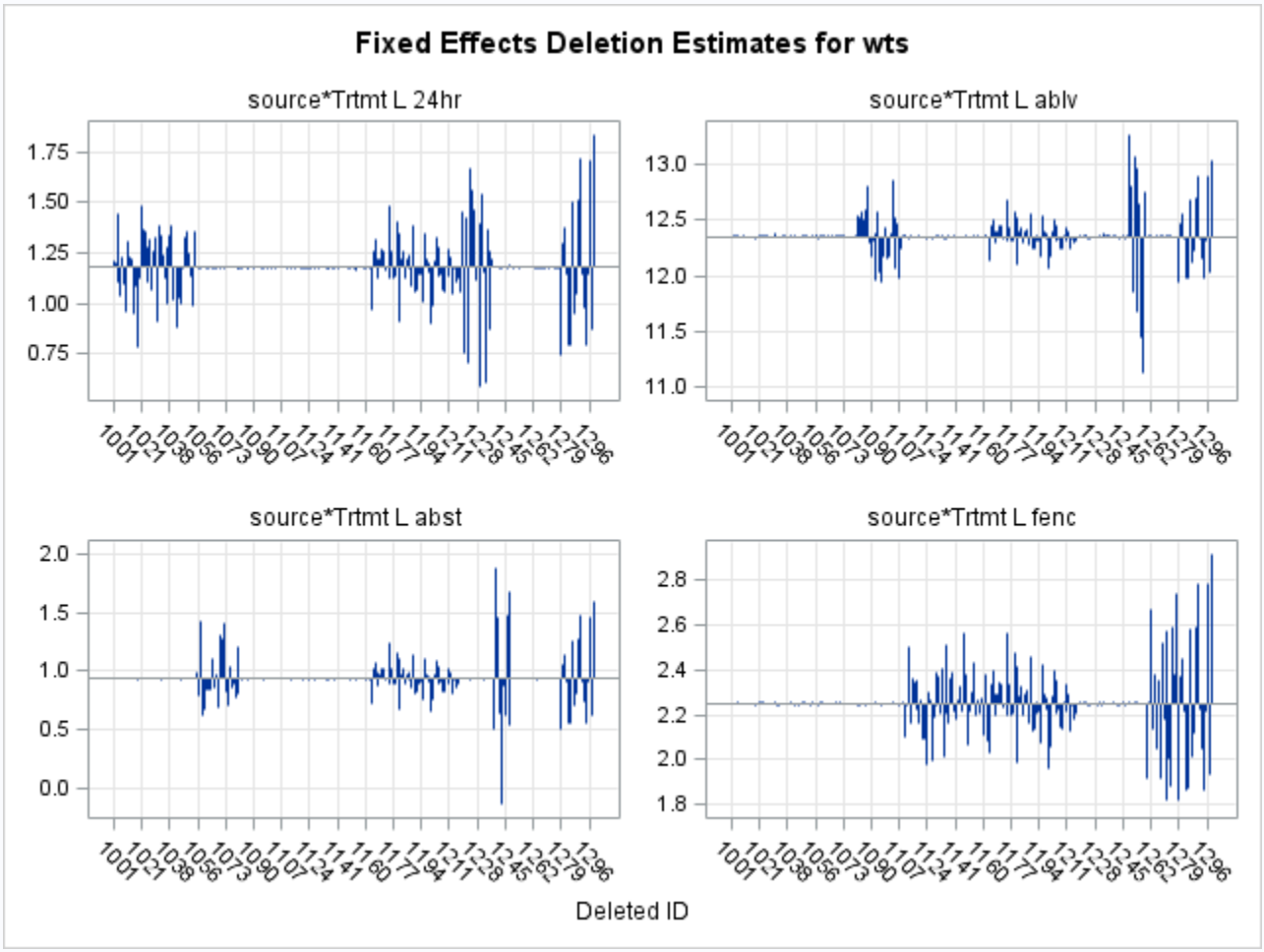
The Mixed Procedure

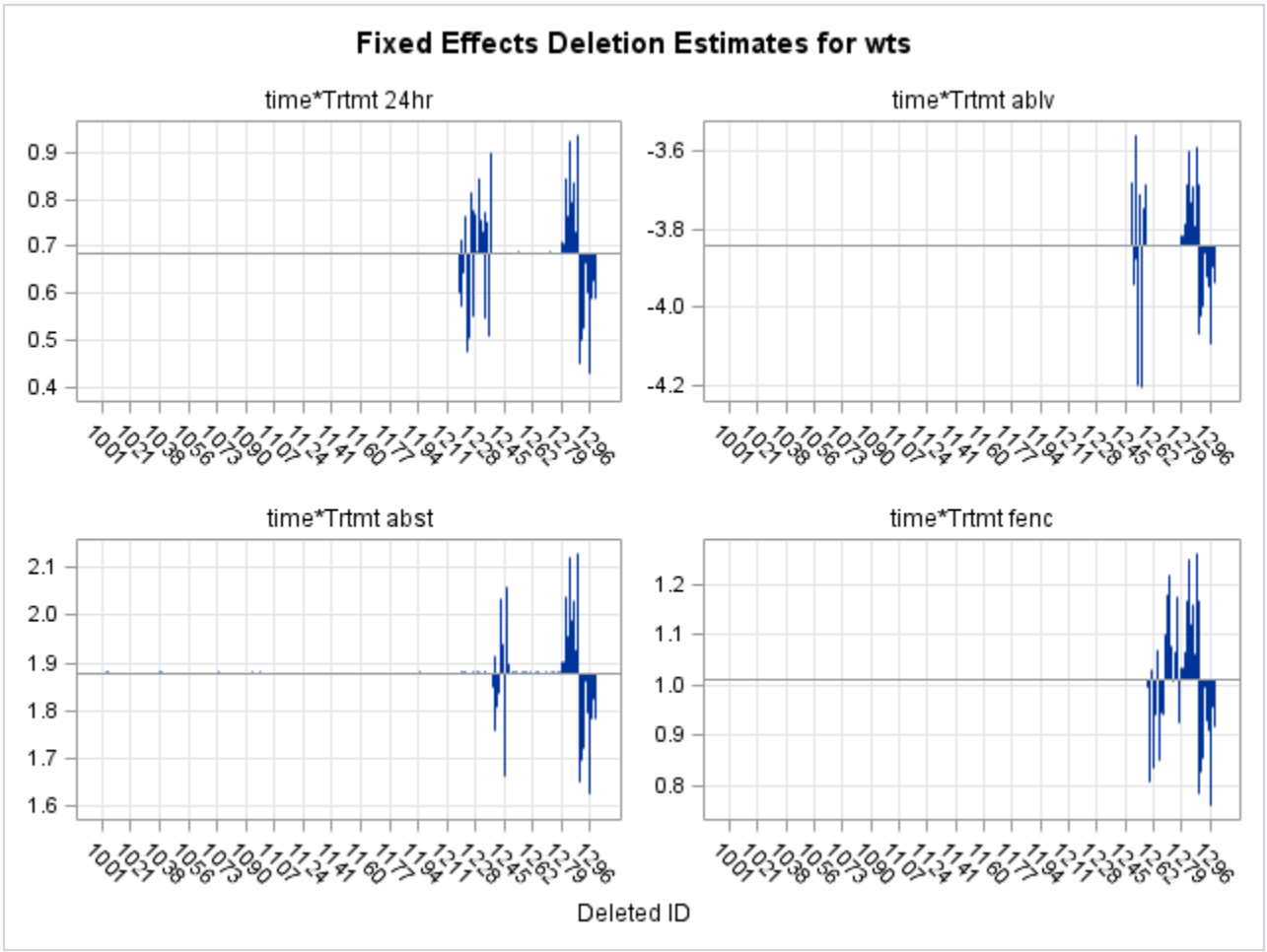


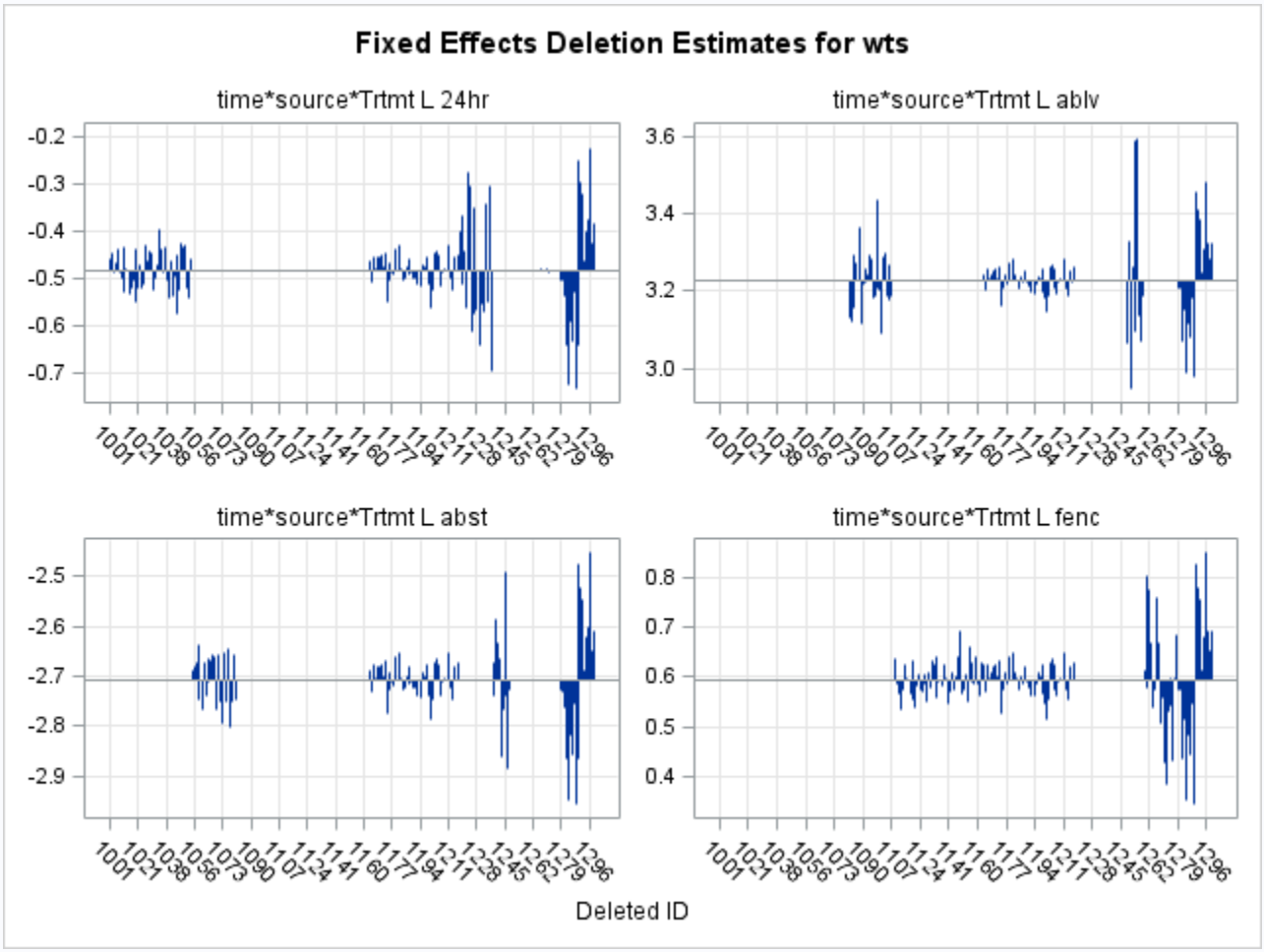

Influence Statistics for wts
Cook's D Fixed Effects
Cook's D Covariance Parameters
CovRatio Fixed Effects
CovRatio Covariance Parameters
Deleted ID

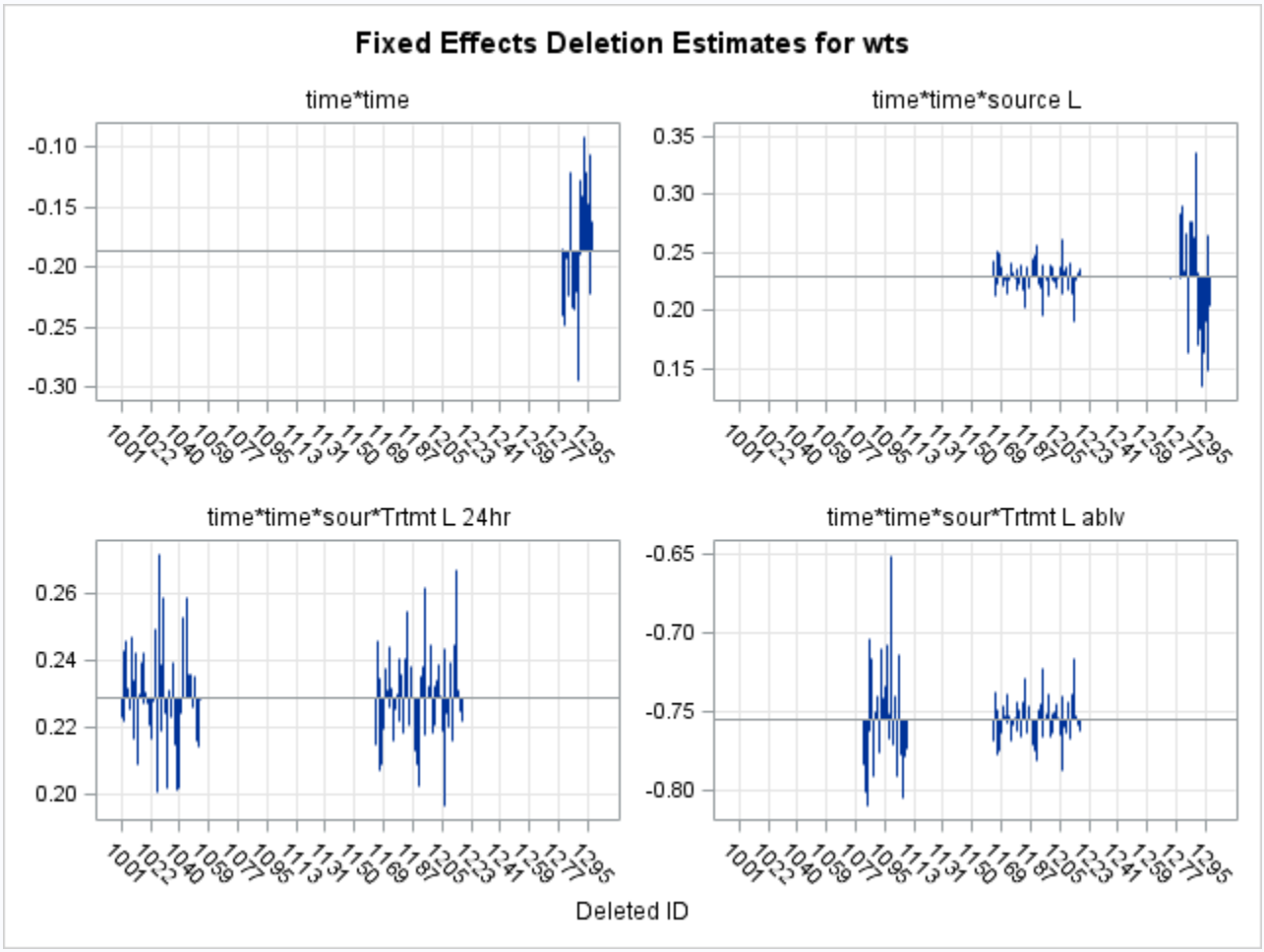

Fixed Effects Deletion Estimates for wts
Intercept
source L
time
time*source L
Deleted ID

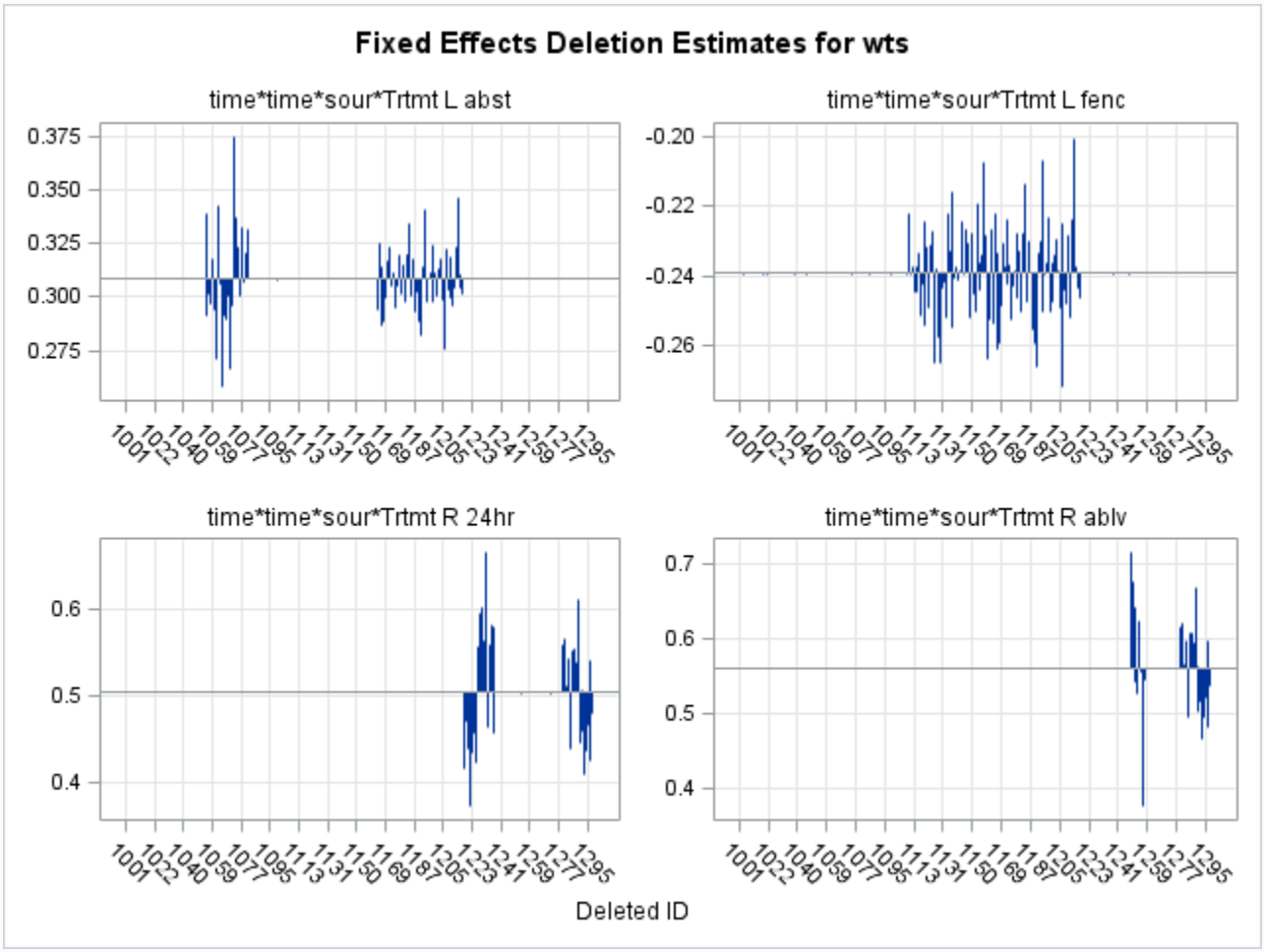

Fixed Effects Deletion Estimates for wts
Trtmt 24hr
Trtmt ablv
Trtmt abst
Trtmt fenc
Deleted ID

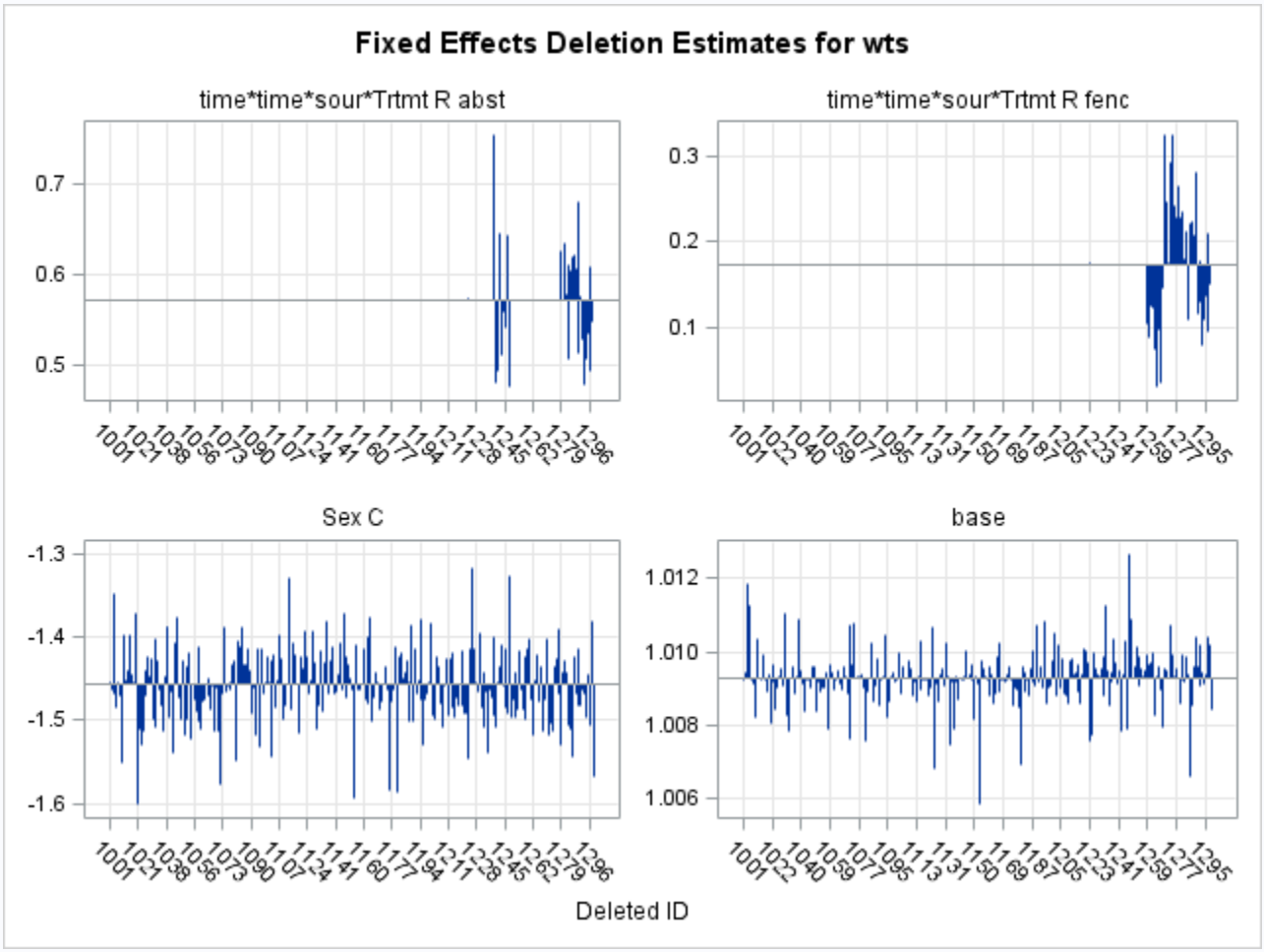

Fixed Effects Deletion Estimates for wts
source*Trtmt L 24hr
1.75
1.50
1.25
1.00
0.75
source*Trtmt L ablv
13.0
12.5
12.0
11.5
11.0
source*Trtmt L abst
2.0
1.5
1.0
0.5
0.0
source*Trtmt L fenc
2.8
2.6
2.4
2.2
2.0
1.8
1001 1021 1038 1056 1073 1090 1107 1124 1141 1160 1177 1194 1211 1228 1245 1262 1279 1296
Deleted ID

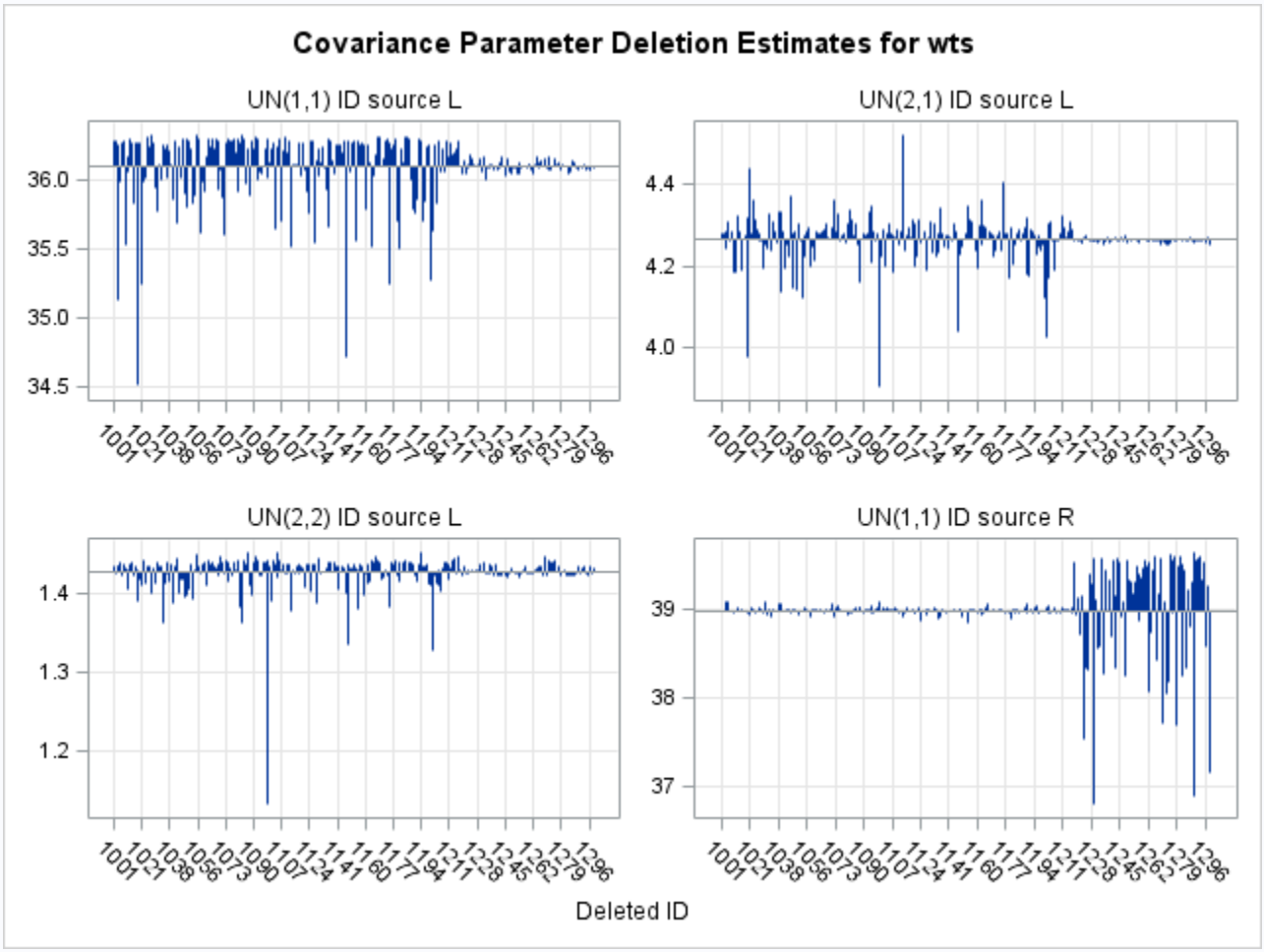

Fixed Effects Deletion Estimates for wts
time*Trtmt 24hr
time*Trtmt ablv
time*Trtmt abst
time*Trtmt fenc
Deleted ID

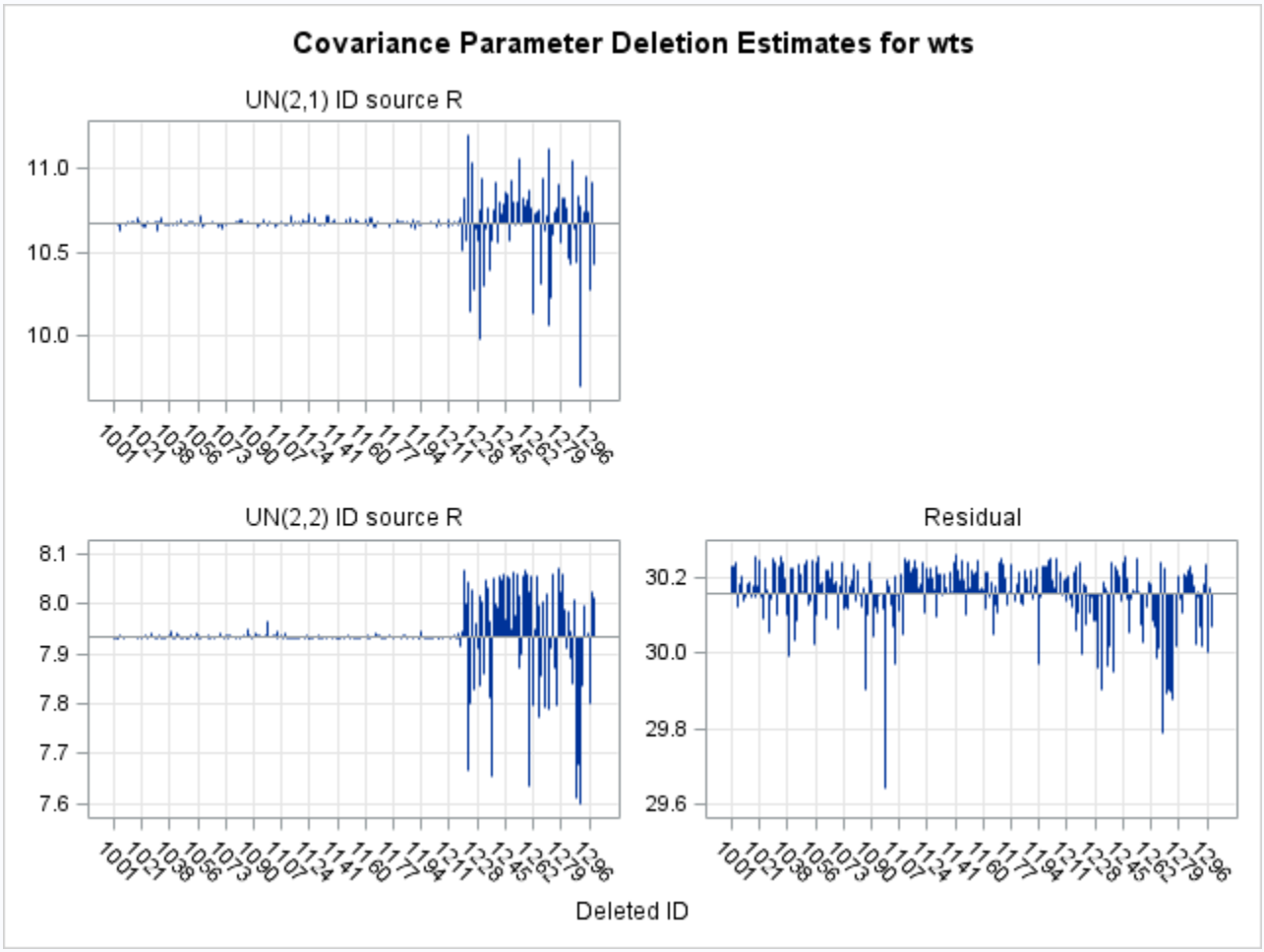

Fixed Effects Deletion Estimates for wts
time*source*Trtmt L 24hr
time*source*Trtmt L ablv
time*source*Trtmt L abst
time*source*Trtmt L fenc
Deleted ID


Fixed Effects Deletion Estimates for wts
time*time
time*time*source L
time*time*sour*Trtmt L 24hr
time*time*sour*Trtmt L ablv
-0.10
-0.15
-0.20
-0.25
-0.30
0.35
0.30
0.25
0.20
0.15
0.26
0.24
0.22
0.20
-0.65
-0.70
-0.75
-0.80
1001 1022 1040 1059 1077 1095 1113 1131 1150 1169 1187 1205 1223 1241 1259 1277 1295
Deleted ID


Fixed Effects Deletion Estimates for wts
time*time*sour*Trtmt L abst
time*time*sour*Trtmt L fenc
time*time*sour*Trtmt R 24hr
time*time*sour*Trtmt R ablv
Deleted ID


Fixed Effects Deletion Estimates for wts
time*time*sour*Trtmt R abst
time*time*sour*Trtmt R fenc
Sex C
base
Deleted ID


Covariance Parameter Deletion Estimates for wts
UN(1,1) ID source L
UN(2,1) ID source L
UN(2,2) ID source L
UN(1,1) ID source R
Deleted ID


Covariance Parameter Deletion Estimates for wts
UN(2,1) ID source R
11.0
10.5
10.0
UN(2,2) ID source R
8.1
8.0
7.9
7.8
7.7
7.6
Residual
30.2
30.0
29.8
29.6
1001 1021 1038 1056 1073 1090 1107 1124 1141 1160 1177 1194 1211 1228 1245 1262 1279 1296
Deleted ID

all calves time*time interactions with outpred

The Mixed Procedure

Model Information

Data Set	AGRON3.ALLSTEP1
Dependent Variable	wts
Covariance Structure	Unstructured
Subject Effect	ID
Group Effect	source
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information

Class	Levels	Values
source	2	L R
ID	293	1001 1002 1003 1005 1006 1007 1008 1009 1010 1011 1012 1013 1015 1016 1017 1018 1019 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1150 1151 1152 1153 1154 1155 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279

Class Level Information

Class	Levels	Values
		1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299
Trtmt	5	24hr ablv abst fenc flap
dummy	6	-2 -1 0 1 2 3
Sex	2	C S

Dimensions

Covariance Parameters	7
Columns in X	52
Columns in Z per Subject	4
Subjects	293
Max Obs per Subject	6

Number of Observations

Number of Observations Read	1794
Number of Observations Used	1724
Number of Observations Not Used	70

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	12459.91680226	
1	2	11575.67021610	0.00000014
2	1	11575.66961824	0.00000000

Convergence criteria met.

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
UN(1,1)	**ID**	**source L**	36.0905

UN(2,1)	**ID**	**source L**	4.2641
UN(2,2)	**ID**	**source L**	1.4259

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
UN(1,1)	**ID**	**source R**	38.9885
UN(2,1)	**ID**	**source R**	10.6735
UN(2,2)	**ID**	**source R**	7.9348
Residual			30.1572

Fit Statistics

-2 Res Log Likelihood	11575.7
AIC (Smaller is Better)	11589.7
AICC (Smaller is Better)	11589.7
BIC (Smaller is Better)	11615.4

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
6	884.25	<.0001

Solution for Fixed Effects

Effect	source	Trtmt	Sex	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept				7.8097	3.5973	285	2.17	0.0308
source	**L**			5.9386	1.8707	187	3.17	0.0018
source	**R**			0	.	.	.	.
time				3.5092	0.7068	90.6	4.97	<.0001
time*source	**L**			-1.6541	0.7574	119	-2.18	0.0309
time*source	**R**			0	.	.	.	.
Trtmt		**24hr**		0.9450	2.2301	99.7	0.42	0.6727
Trtmt		**ablv**		-8.5158	2.7386	99	-3.11	0.0024
Trtmt		**abst**		0.3493	2.6531	99.1	0.13	0.8955
Trtmt		**fenc**		0.3157	2.2209	98	0.14	0.8872

Trtmt		**flap**		0	.	.	.	.
source*Trtmt	**L**	**24hr**		1.1769	2.6096	178	0.45	0.6526

Solution for Fixed Effects

Effect	**source**	**Trtmt**	**Sex**	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**
source*Trtmt	**L**	**ablv**		12.3539	3.1856	173	3.88	0.0001
source*Trtmt	**L**	**abst**		0.9333	3.1133	179	0.30	0.7647
source*Trtmt	**L**	**fenc**		2.2486	2.5937	174	0.87	0.3872
source*Trtmt	**L**	**flap**		0	.	.	.	.
source*Trtmt	**R**	**24hr**		0	.	.	.	.
source*Trtmt	**R**	**ablv**		0	.	.	.	.
source*Trtmt	**R**	**abst**		0	.	.	.	.
source*Trtmt	**R**	**fenc**		0	.	.	.	.
source*Trtmt	**R**	**flap**		0	.	.	.	.
time*Trtmt		**24hr**		0.6851	1.0157	91.8	0.67	0.5017
time*Trtmt		**ablv**		-3.8405	1.2437	90.4	-3.09	0.0027
time*Trtmt		**abst**		1.8799	1.2084	91.4	1.56	0.1232
time*Trtmt		**fenc**		1.0128	1.0113	90.4	1.00	0.3193
time*Trtmt		**flap**		0	.	.	.	.
time*source*Trtmt	**L**	**24hr**		-0.4817	1.0887	120	-0.44	0.6590
time*source*Trtmt	**L**	**ablv**		3.2272	1.3299	118	2.43	0.0168
time*source*Trtmt	**L**	**abst**		-2.7070	1.2969	120	-2.09	0.0390
time*source*Trtmt	**L**	**fenc**		0.5949	1.0827	118	0.55	0.5837
time*source*Trtmt	**L**	**flap**		0	.	.	.	.
time*source*Trtmt	**R**	**24hr**		0	.	.	.	.
time*source*Trtmt	**R**	**ablv**		0	.	.	.	.
time*source*Trtmt	**R**	**abst**		0	.	.	.	.
time*source*Trtmt	**R**	**fenc**		0	.	.	.	.
time*source*Trtmt	**R**	**flap**		0	.	.	.	.
time*time				-0.1864	0.1987	1132	-0.94	0.3482
time*time*source	**L**			0.2290	0.2344	1131	0.98	0.3289
time*time*source	**R**			0	.	.	.	.

Solution for Fixed Effects

Effect	source	Trtmt	Sex	Estimate	Standard Error	DF	t Value	Pr > |t|
time*time*sour*Trtmt	L	24hr		0.2292	0.1781	1129	1.29	0.1984
time*time*sour*Trtmt	L	ablv		-0.7545	0.2131	1129	-3.54	0.0004
time*time*sour*Trtmt	L	abst		0.3085	0.2143	1129	1.44	0.1502
time*time*sour*Trtmt	L	fenc		-0.2392	0.1770	1131	-1.35	0.1769
time*time*sour*Trtmt	L	flap		0	.	.	.	.
time*time*sour*Trtmt	R	24hr		0.5043	0.2878	1140	1.75	0.0800
time*time*sour*Trtmt	R	ablv		0.5600	0.3494	1131	1.60	0.1093
time*time*sour*Trtmt	R	abst		0.5732	0.3390	1131	1.69	0.0912
time*time*sour*Trtmt	R	fenc		0.1743	0.2826	1130	0.62	0.5376
time*time*sour*Trtmt	R	flap		0	.	.	.	.
Sex			C	-1.4574	0.7414	281	-1.97	0.0503
Sex			S	0	.	.	.	.
base				1.0093	0.01164	279	86.68	<.0001

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
source	1	212	74.17	<.0001
time	1	119	177.44	<.0001
time*source	1	119	14.27	0.0002
Trtmt	4	176	1.83	0.1247
source*Trtmt	4	176	4.25	0.0026
time*Trtmt	4	119	7.25	<.0001
time*source*Trtmt	4	119	4.07	0.0040
time*time	1	1132	1.04	0.3081
time*time*source	1	1132	3.24	0.0721
time*time*sour*Trtmt	8	1131	4.18	<.0001
Sex	1	281	3.86	0.0503
base	1	279	7513.47	<.0001

The GLM Procedure

Class Level Information

Class	Levels	Values
Trtmt	5	24hr ablv abst fenc flap

Number of Observations Read	299
Number of Observations Used	293

All calves predicted gains full study compare trtmts

The GLM Procedure

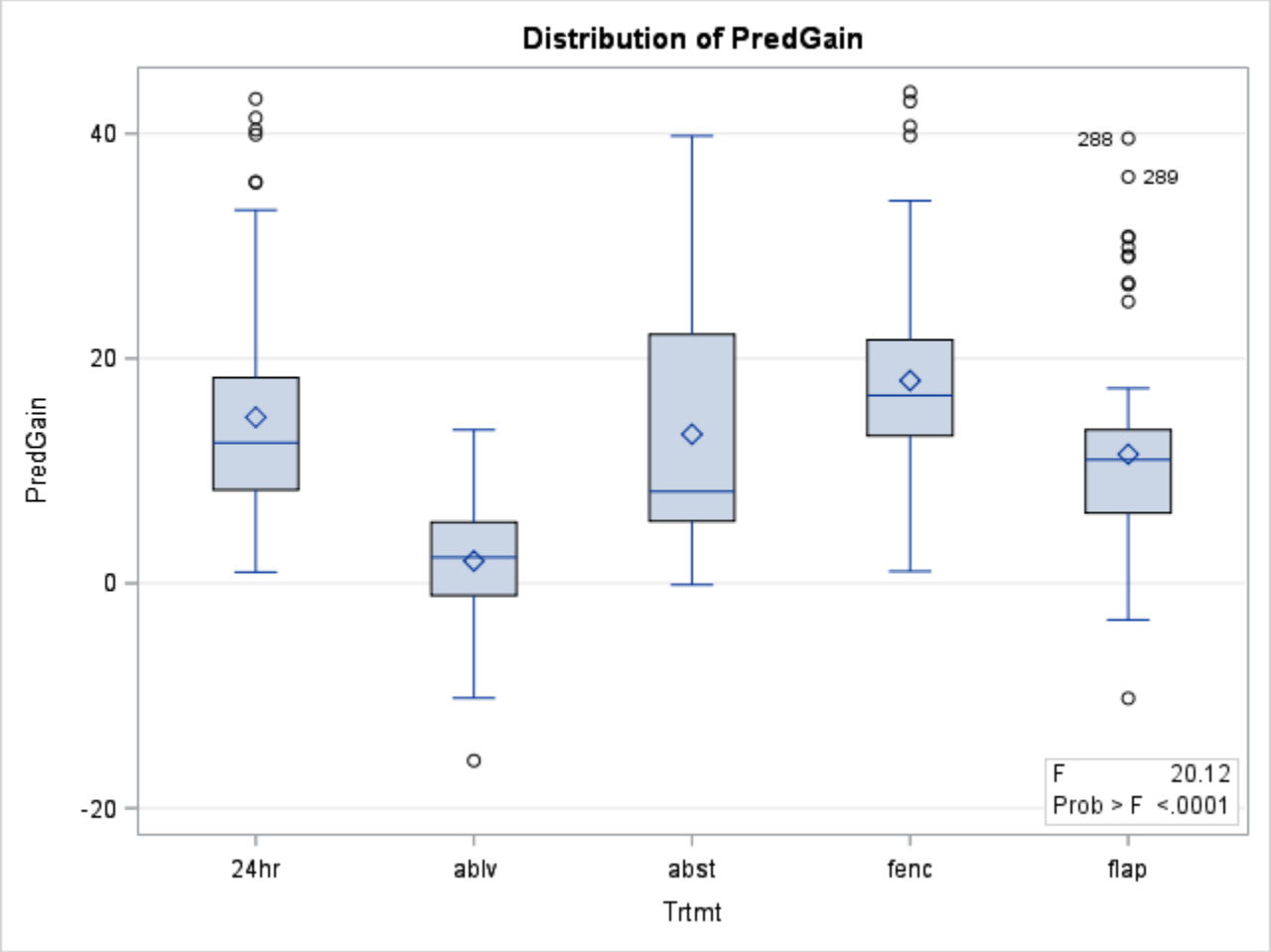
Dependent Variable: PredGain

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6727.49331	1681.87333	20.12	<.0001
Error	288	24074.52297	83.59209		
Corrected Total	292	30802.01628			

R-Square	Coeff Var	Root MSE	PredGain Mean
0.218411	70.70143	9.142871	12.93166

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Trtmt	4	6727.493305	1681.873326	20.12	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Trtmt	4	6727.493305	1681.873326	20.12	<.0001


Distribution of PredGain
PredGain
40
20
0
-20
288
289
F 20.12
Prob > F <.0001
24hr
ablv
abst
fenc
flap
Trtmt

All calves predicted gains full study compare trtmts

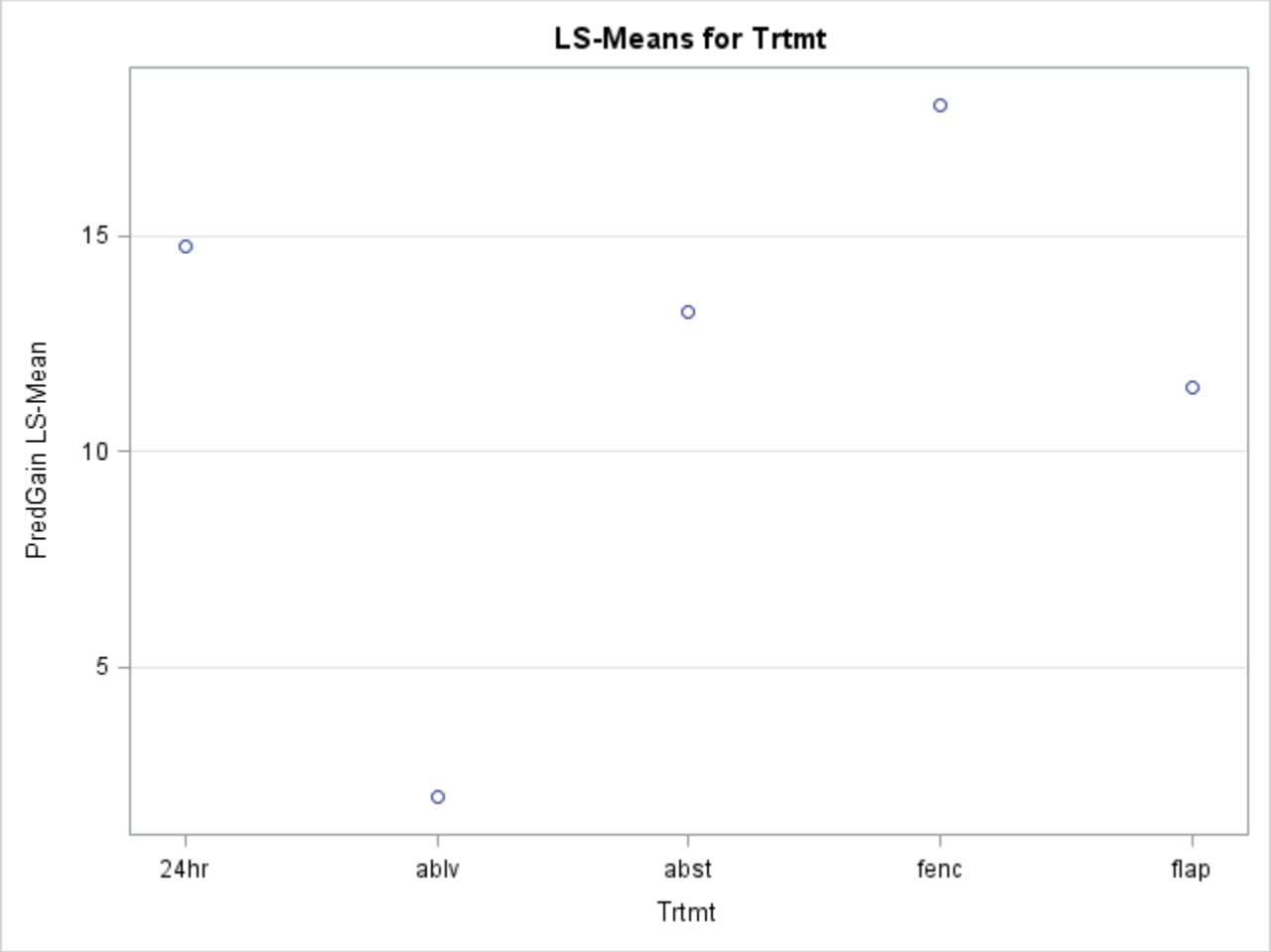
The GLM Procedure
Least Squares Means

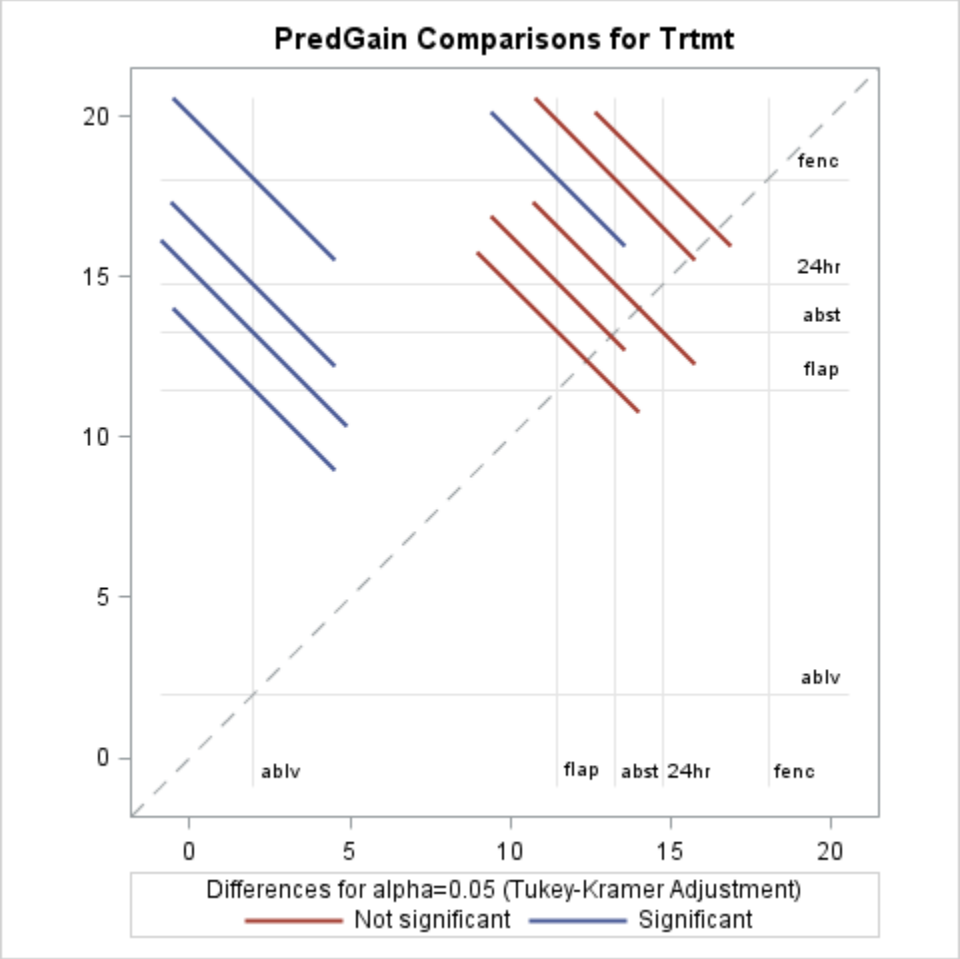
Adjustment for Multiple Comparisons: Tukey-Kramer

Trtmt	PredGain LSMEAN	LSMEAN Number
24hr	14.7682224	1
ablv	1.9901544	2
abst	13.2590685	3
fenc	18.0339725	4
flap	11.4832213	5

Least Squares Means for effect Trtmt
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: PredGain

i/j	1	2	3	4	5
1		<.0001	0.9246	0.2081	0.1973
2	<.0001		<.0001	<.0001	<.0001
3	0.9246	<.0001		0.0710	0.8661
4	0.2081	<.0001	0.0710		0.0002
5	0.1973	<.0001	0.8661	0.0002	


LS-Means for Trtmt
PredGain LS-Mean
15
10
5
24hr
ablv
abst
fenc
flap
Trtmt


PredGain Comparisons for Trtmt
20
15
10
5
0
fenc
24hr
abst
flap
ablv
ablv
flap
abst
24hr
fenc
0
5
10
15
20
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

The Mixed Procedure

Model Information

Data Set	AGRON4.ALLGAINQUAD
Dependent Variable	PredGain
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information

Class	Levels	Values
Trtmt	5	24hr ablv abst fenc flap

Dimensions

Covariance Parameters	1
Columns in X	6
Columns in Z	0
Subjects	1
Max Obs per Subject	293

Number of Observations

Number of Observations Read	299
Number of Observations Used	293
Number of Observations Not Used	6

Covariance Parameter Estimates

Cov Parm	Estimate
Residual	83.5921

Fit Statistics

-2 Res Log Likelihood	2112.1
AIC (Smaller is Better)	2114.1
AICC (Smaller is Better)	2114.1
BIC (Smaller is Better)	2117.7

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Trtmt	4	288	20.12	<.0001

Least Squares Means

Effect	Trtmt	Estimate	Standard Error	DF	t Value	Pr > |t|
Trtmt	**24hr**	14.7682	1.0928	288	13.51	<.0001
Trtmt	**ablv**	1.9902	1.5031	288	1.32	0.1865
Trtmt	**abst**	13.2591	1.4832	288	8.94	<.0001
Trtmt	**fenc**	18.0340	1.0701	288	16.85	<.0001
Trtmt	**flap**	11.4832	1.0557	288	10.88	<.0001

Differences of Least Squares Means

Effect	Trtmt	Trtmt	Estimate	Standard Error	DF	t Value	Pr > |t|	Adjustment	Adj P
Trtmt	**24hr**	**ablv**	12.7781	1.8583	288	6.88	<.0001	Tukey-Kramer	<.0001
Trtmt	**24hr**	**abst**	1.5092	1.8423	288	0.82	0.4134	Tukey-Kramer	0.9246
Trtmt	**24hr**	**fenc**	-3.2658	1.5295	288	-2.14	0.0336	Tukey-Kramer	0.2081
Trtmt	**24hr**	**flap**	3.2850	1.5195	288	2.16	0.0314	Tukey-Kramer	0.1973
Trtmt	**ablv**	**abst**	-11.2689	2.1116	288	-5.34	<.0001	Tukey-Kramer	<.0001
Trtmt	**ablv**	**fenc**	-16.0438	1.8451	288	-8.70	<.0001	Tukey-Kramer	<.0001
Trtmt	**ablv**	**flap**	-9.4931	1.8368	288	-5.17	<.0001	Tukey-Kramer	<.0001
Trtmt	**abst**	**fenc**	-4.7749	1.8289	288	-2.61	0.0095	Tukey-Kramer	0.0710
Trtmt	**abst**	**flap**	1.7758	1.8205	288	0.98	0.3302	Tukey-Kramer	0.8661
Trtmt	**fenc**	**flap**	6.5508	1.5032	288	4.36	<.0001	Tukey-Kramer	0.0002

All calves predicted ADG full compare trtmts

The GLM Procedure

Class Level Information

Class	Levels	Values
Trtmt	5	24hr ablv abst fenc flap

Number of Observations Read	299
Number of Observations Used	293

All calves predicted ADG full compare trtmts

The GLM Procedure

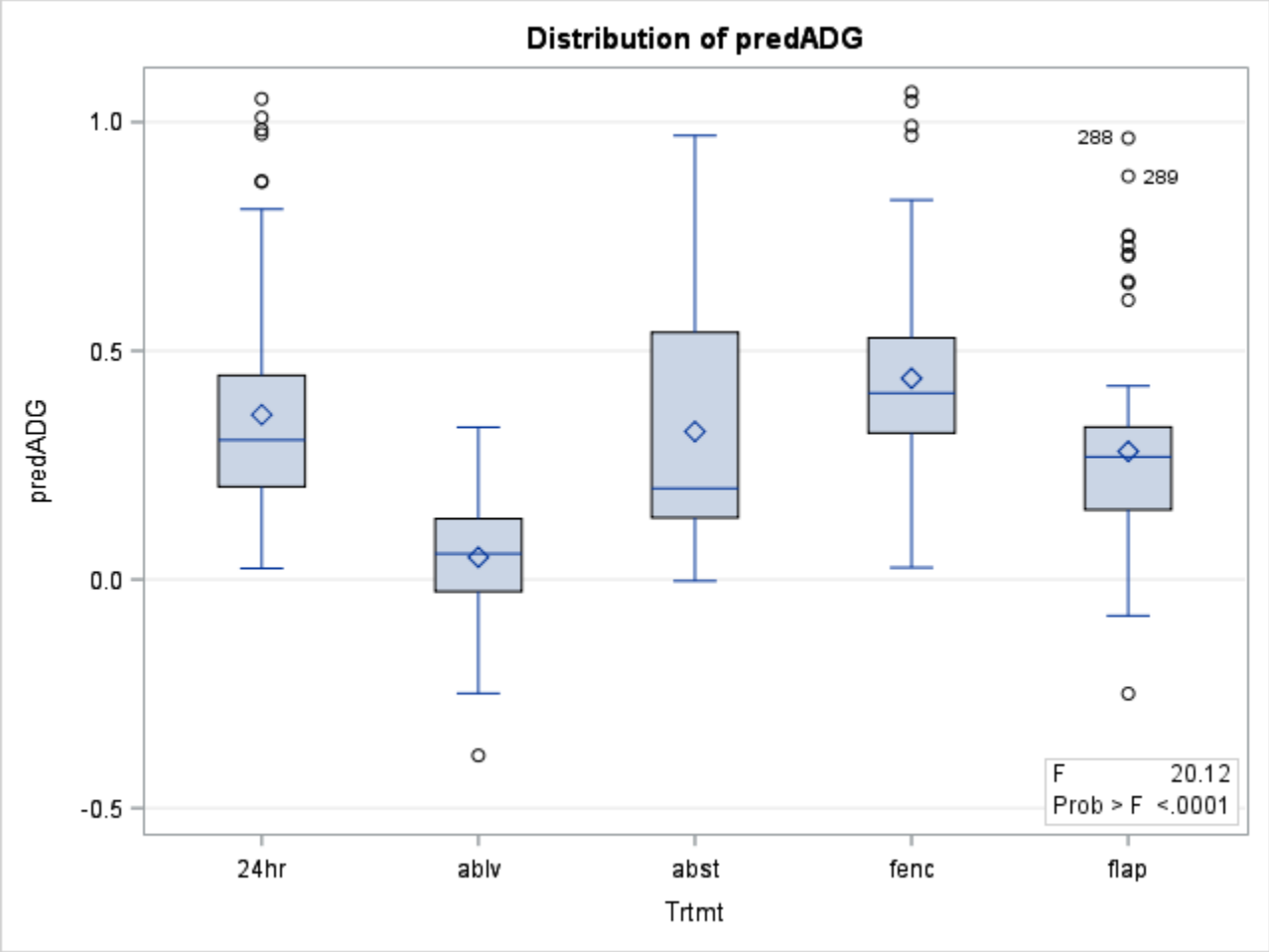
Dependent Variable: predADG

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	4.00207811	1.00051953	20.12	<.0001
Error	288	14.32154847	0.04972760		
Corrected Total	292	18.32362658			

R-Square	Coeff Var	Root MSE	predADG Mean
0.218411	70.70143	0.222997	0.315406

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Trtmt	4	4.00207811	1.00051953	20.12	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Trtmt	4	4.00207811	1.00051953	20.12	<.0001


Distribution of predADG
predADG
1.0
0.5
0.0
-0.5
288
289
F 20.12
Prob > F <.0001
24hr
ablv
abst
fenc
flap
Trtmt

All calves predicted ADG full compare trtmts

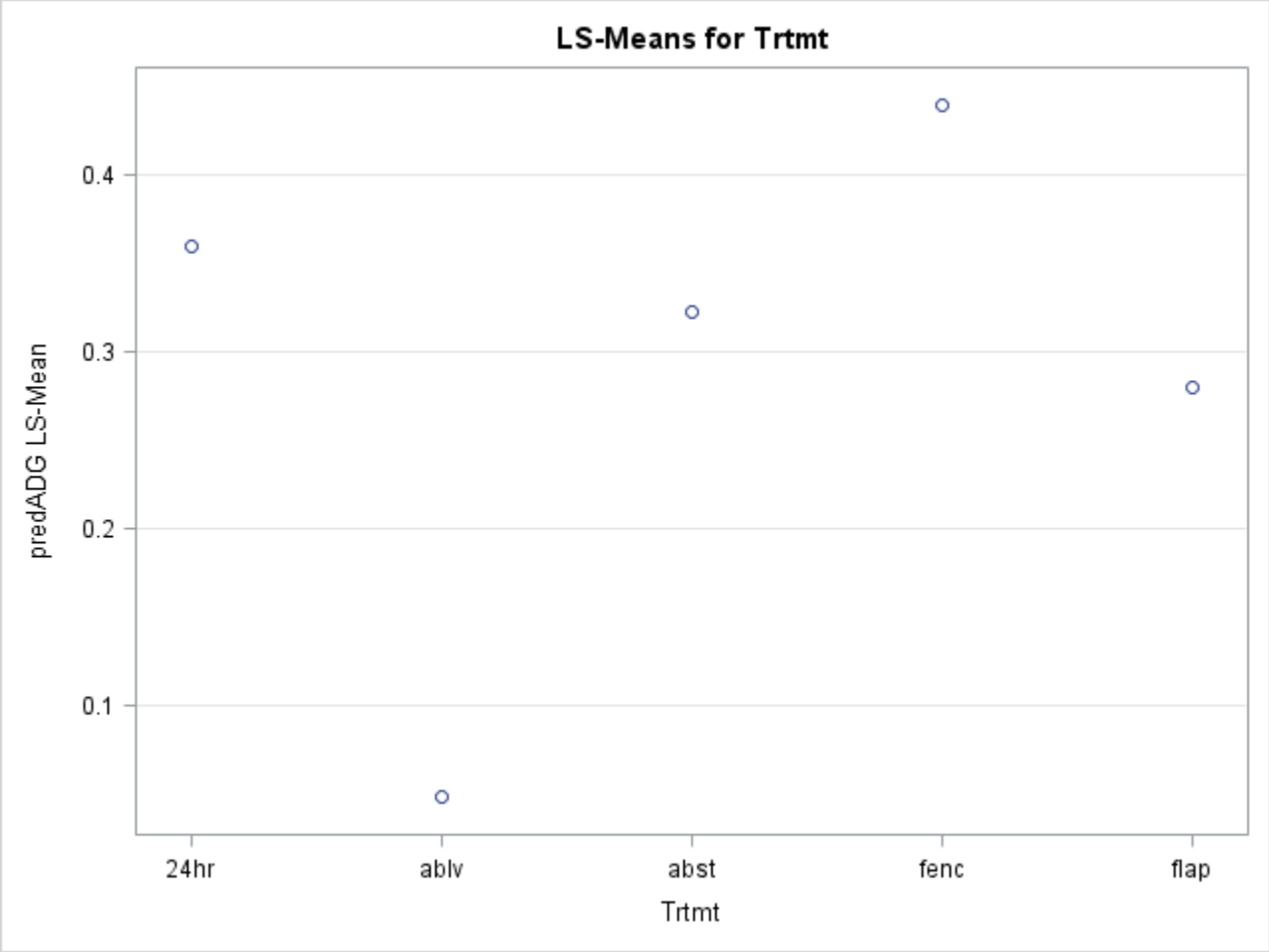
The GLM Procedure
Least Squares Means

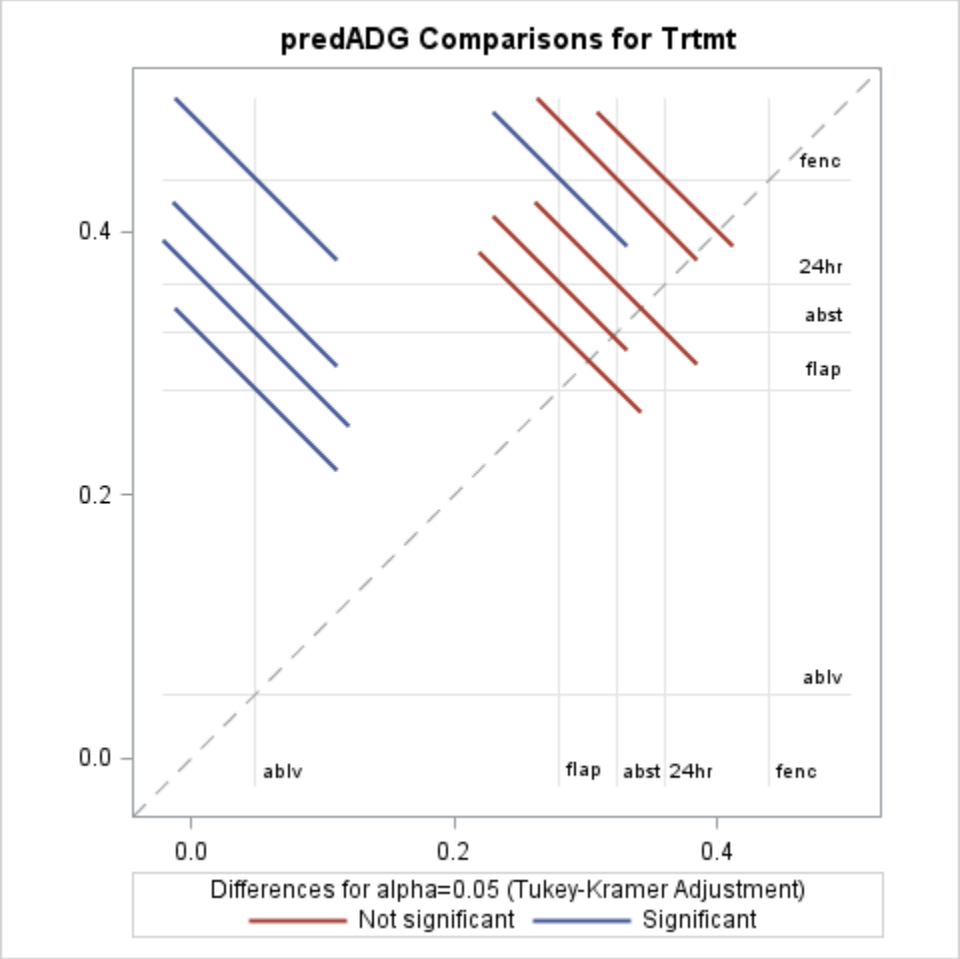
Adjustment for Multiple Comparisons: Tukey-Kramer

Trtmt	predADG LSMEAN	LSMEAN Number
24hr	0.36020055	1
ablv	0.04854035	2
abst	0.32339191	3
fenc	0.43985299	4
flap	0.28007857	5

Least Squares Means for effect Trtmt
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: predADG

i/j	1	2	3	4	5
1		<.0001	0.9246	0.2081	0.1973
2	<.0001		<.0001	<.0001	<.0001
3	0.9246	<.0001		0.0710	0.8661
4	0.2081	<.0001	0.0710		0.0002
5	0.1973	<.0001	0.8661	0.0002	


LS-Means for Trtmt
predADG LS-Mean
0.4
0.3
0.2
0.1
24hr
ablv
abst
fenc
flap
Trtmt


predADG Comparisons for Trtmt
fenc
24hr
abst
flap
ablv
0.4
0.2
0.0
ablv
flap
abst
24hr
fenc
0.0
0.2
0.4
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

All calves predicted ADG full compare trtmts

The Mixed Procedure

Model Information

Data Set	AGRON4.ALLGAINQUAD
Dependent Variable	predADG
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information

Class	Levels	Values
Trtmt	5	24hr ablv abst fenc flap

Dimensions

Covariance Parameters	1
Columns in X	6
Columns in Z	0
Subjects	1
Max Obs per Subject	293

Number of Observations

Number of Observations Read	299
Number of Observations Used	293
Number of Observations Not Used	6

Covariance Parameter Estimates

Cov Parm	Estimate
Residual	0.04973

Fit Statistics

-2 Res Log Likelihood	-26.9
AIC (Smaller is Better)	-24.9
AICC (Smaller is Better)	-24.9
BIC (Smaller is Better)	-21.3

Type 3 Tests of Fixed Effects

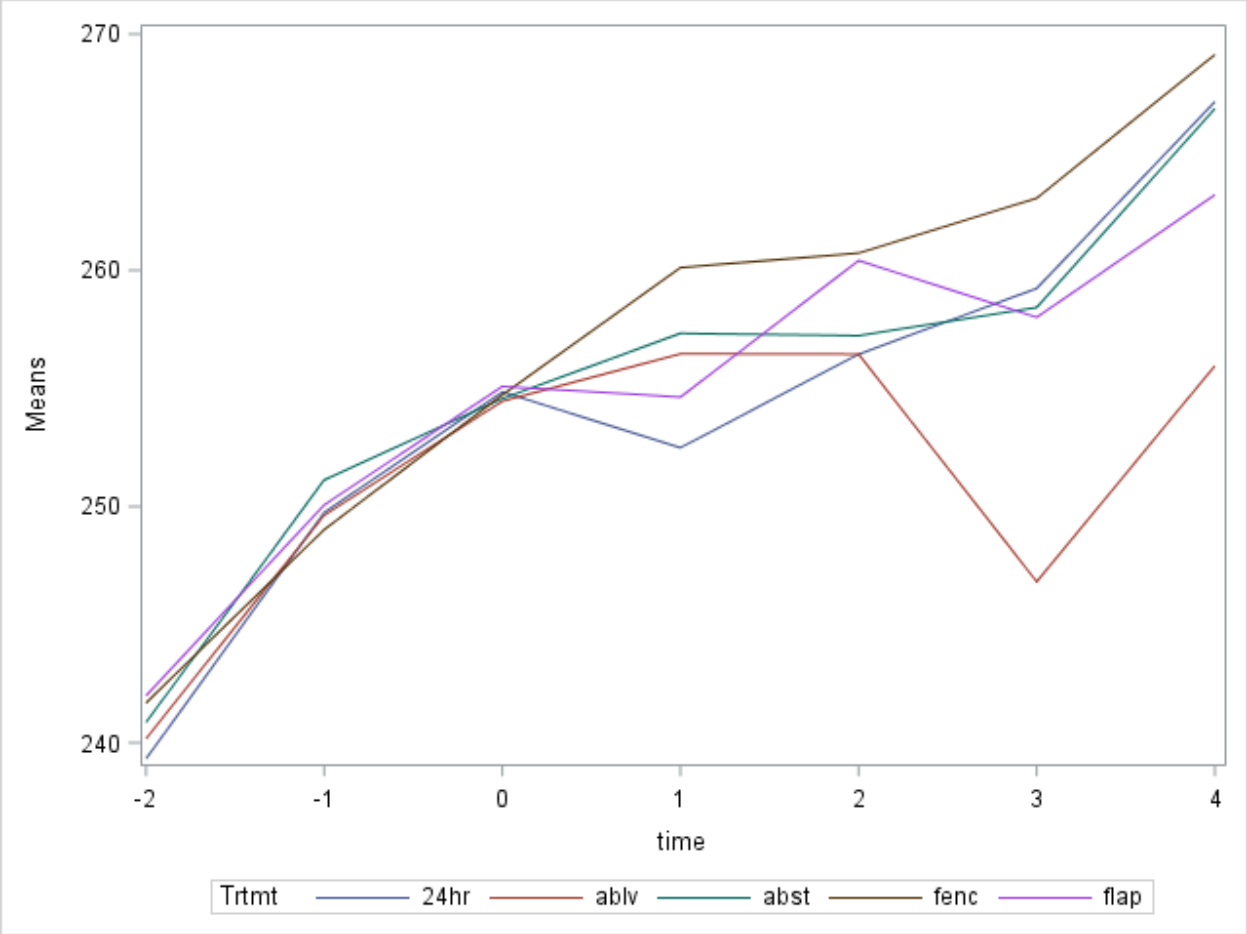
Effect	Num DF	Den DF	F Value	Pr > F
Trtmt	4	288	20.12	<.0001

Least Squares Means

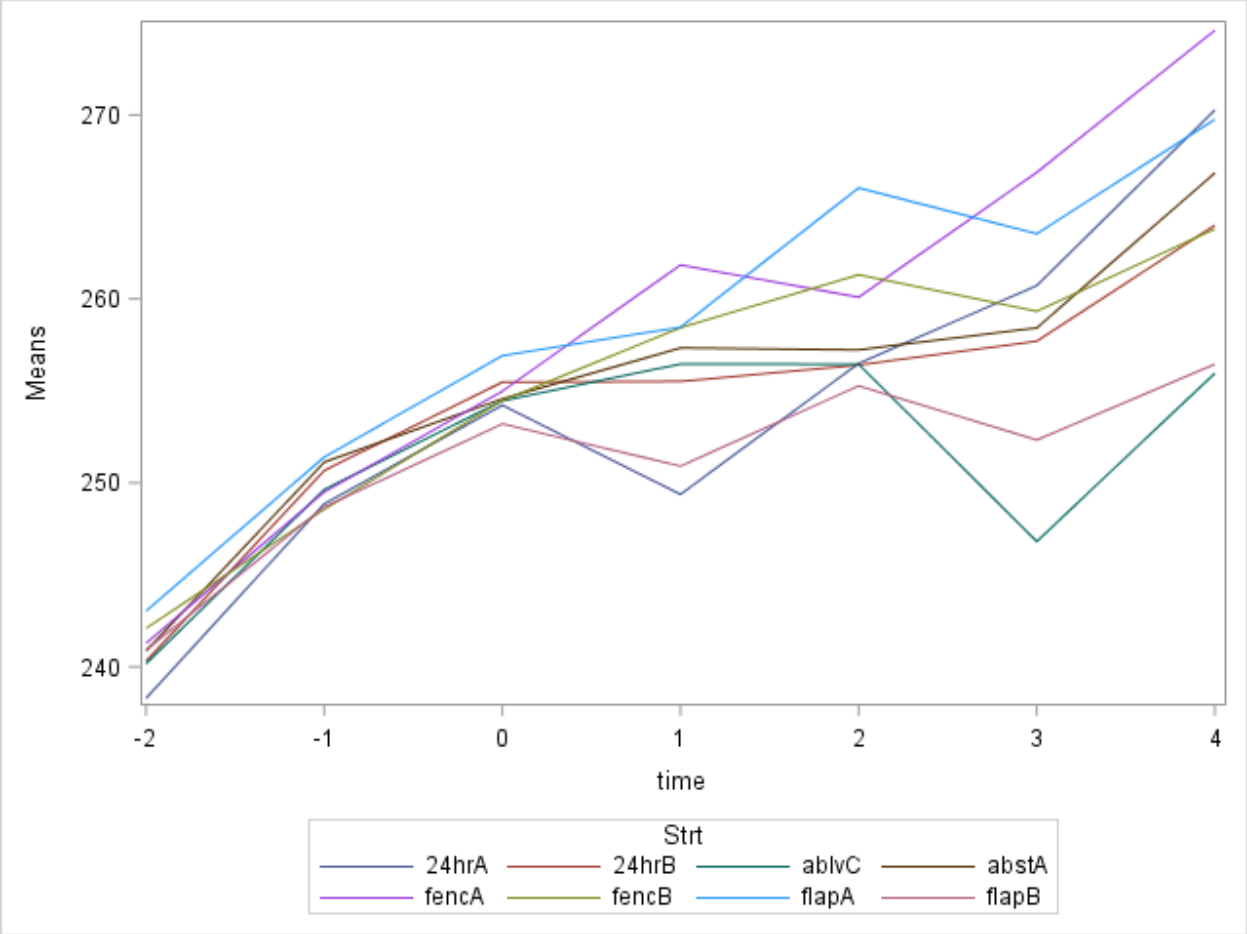
Effect	Trtmt	Estimate	Standard Error	DF	t Value	Pr > |t|
Trtmt	**24hr**	0.3602	0.02665	288	13.51	<.0001
Trtmt	**ablv**	0.04854	0.03666	288	1.32	0.1865
Trtmt	**abst**	0.3234	0.03617	288	8.94	<.0001
Trtmt	**fenc**	0.4399	0.02610	288	16.85	<.0001
Trtmt	**flap**	0.2801	0.02575	288	10.88	<.0001

Differences of Least Squares Means

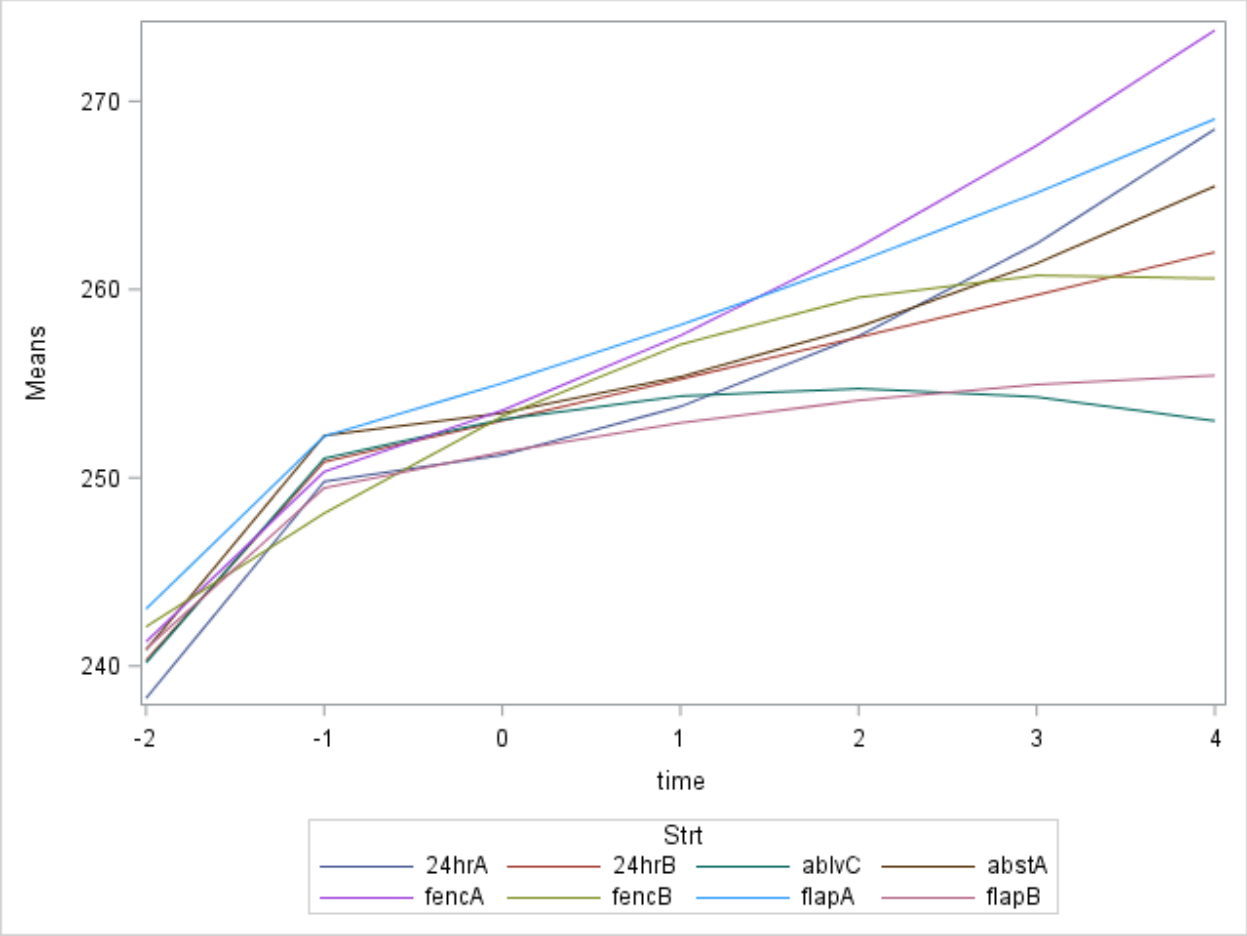
Effect	Trtmt	Trtmt	Estimate	Standard Error	DF	t Value	Pr > |t|	Adjustment	Adj P
Trtmt	**24hr**	**ablv**	0.3117	0.04533	288	6.88	<.0001	Tukey-Kramer	<.0001
Trtmt	**24hr**	**abst**	0.03681	0.04493	288	0.82	0.4134	Tukey-Kramer	0.9246
Trtmt	**24hr**	**fenc**	-0.07965	0.03730	288	-2.14	0.0336	Tukey-Kramer	0.2081
Trtmt	**24hr**	**flap**	0.08012	0.03706	288	2.16	0.0314	Tukey-Kramer	0.1973
Trtmt	**ablv**	**abst**	-0.2749	0.05150	288	-5.34	<.0001	Tukey-Kramer	<.0001
Trtmt	**ablv**	**fenc**	-0.3913	0.04500	288	-8.70	<.0001	Tukey-Kramer	<.0001
Trtmt	**ablv**	**flap**	-0.2315	0.04480	288	-5.17	<.0001	Tukey-Kramer	<.0001
Trtmt	**abst**	**fenc**	-0.1165	0.04461	288	-2.61	0.0095	Tukey-Kramer	0.0710
Trtmt	**abst**	**flap**	0.04331	0.04440	288	0.98	0.3302	Tukey-Kramer	0.8661
Trtmt	**fenc**	**flap**	0.1598	0.03666	288	4.36	<.0001	Tukey-Kramer	0.0002



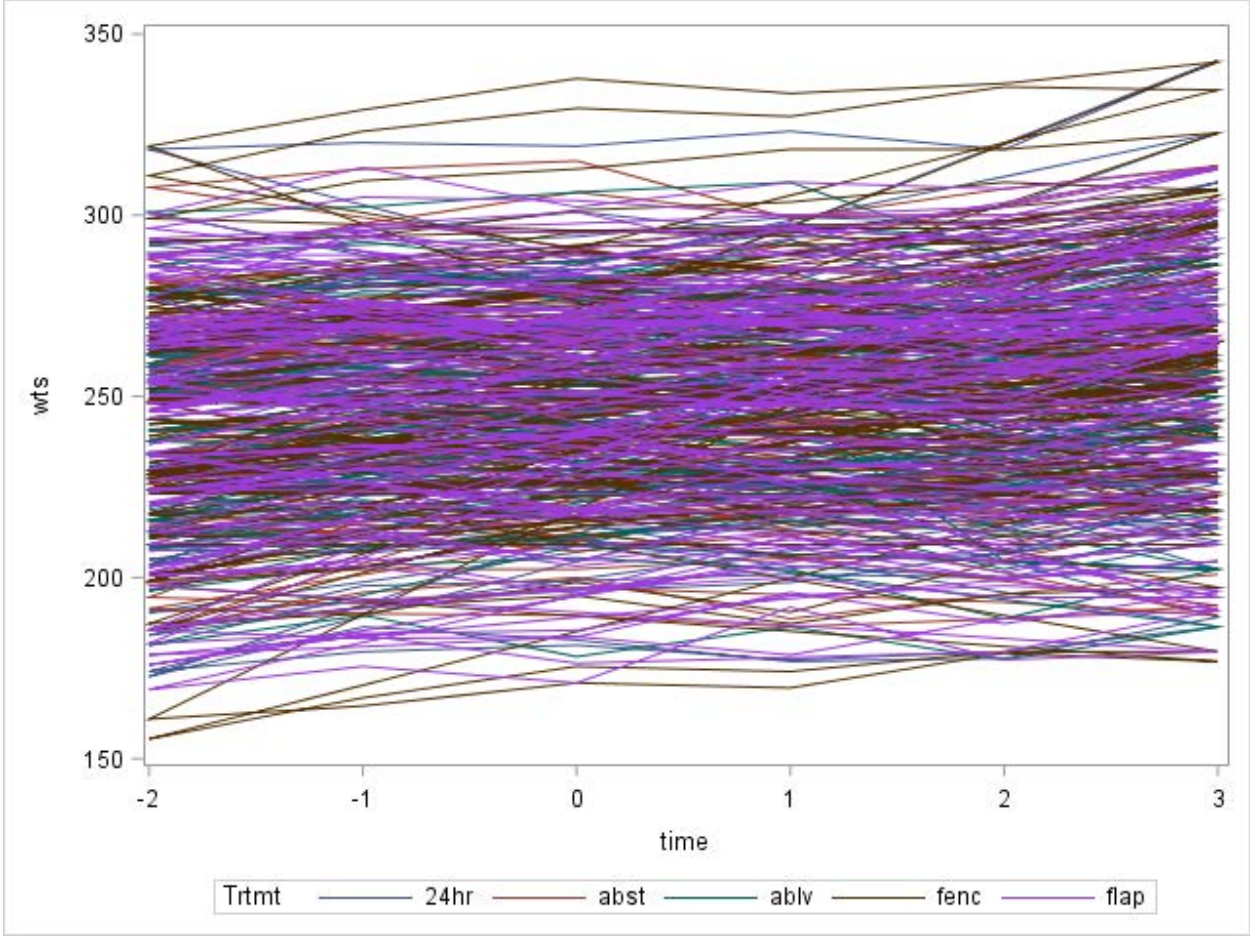
Supplemental figure S1: Mean of actual weights of all calves, presented as main treatment groups (no shipment classification). Weaning method designations are different from those used in the manuscript. 24hr is the SEP group, which had 24 hour separation from dam prior to weaning; ablv is AW-I, which were abruptly weaned and immediately shipped; abst is AW-D, which were weaned abruptly but remained at ranch of origin through D28; fenc is fenceline weaned (FL); and flap is nose-flap (NF). Time 1 reflects weaning, with time -2 representing first weight acquisition, upon which assignment to treatment was based; time -1 reflects base weight at time of study initiation (first separation from dam for the SEP group occurred immediately after this weighing); time 0 represents time of second separation for SEP group and placement of nose flaps for NF group; time 2 is D7; time 3 is D14; and time 4 is D28.



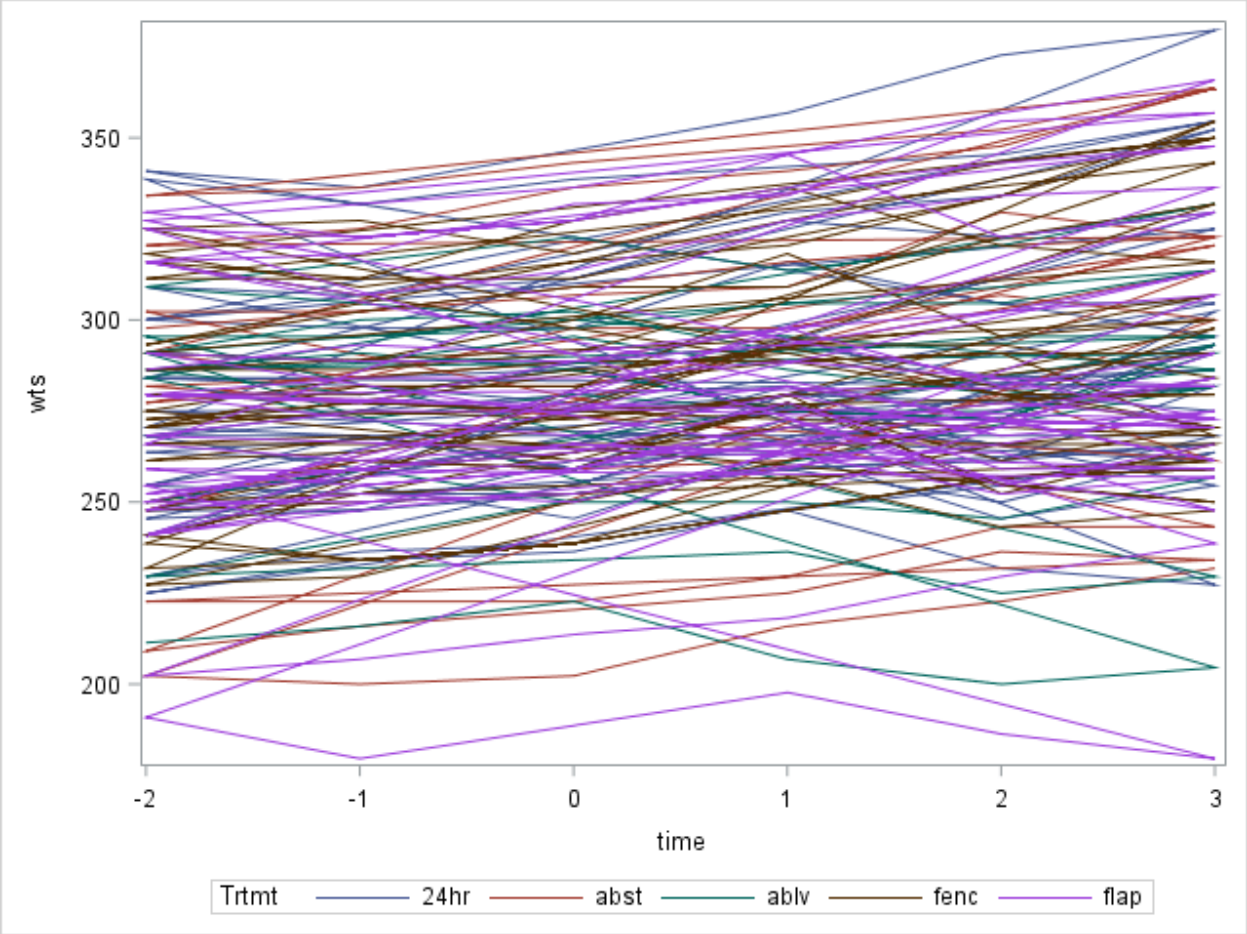
Supplemental figure S2: Mean of actual weights of all calves, presented as a single parameter reflecting both main treatment groups and shipment classification (either shipped on D7 [B] or remaining on ranch of origin throughout study [A]). Weaning method designations are different from those used in the manuscript. 24hr is the SEP group, which had 24 hour separation from dam prior to weaning; ablvC is AW-I, which were abruptly weaned and immediately shipped; abstA is AW-D, which were weaned abruptly but remained at ranch of origin through D28; fenc is fenceline weaned (FL); and flap is nose-flap (NF). Time 1 reflects weaning, with time -2 representing first weight acquisition, upon which assignment to treatment was based; time -1 reflects base weight at time of study initiation (first separation from dam for the SEP group occurred immediately after this weighing); time 0 represents time of second separation for SEP group and placement of nose flaps for NF group; time 2 is D7; time 3 is D14; and time 4 is D28.



Supplemental figure S3: Mean of predicted weights of all calves, presented as a single parameter reflecting both main treatment groups and shipment classification (either shipped on D7 [B] or remaining on ranch of origin throughout study [A]). Weaning method designations are different from those used in the manuscript. 24hr is the SEP group, which had 24 hour separation from dam prior to weaning; ablvC is AW-I, which were abruptly weaned and immediately shipped; abstA is AW-D, which were weaned abruptly but remained at ranch of origin through D28; fenc is fenceline weaned (FL); and flap is nose-flap (NF). Time 1 reflects weaning, with time -2 representing first weight acquisition, upon which assignment to treatment was based; time -1 reflects base weight at time of study initiation (first separation from dam for the SEP group occurred immediately after this weighing); time 0 represents time of second separation for SEP group and placement of nose flaps for NF group; time 2 is D7; time 3 is D14; and time 4 is D28.



Supplemental figure S4: Actual weights of calves from location #1, presented as main treatment groups (no shipment classification). Weaning method designations are different from those used in the manuscript. 24hr is the SEP group, which had 24 hour separation from dam prior to weaning; ablv is AW-I, which were abruptly weaned and immediately shipped; abst is AW-D, which were weaned abruptly but remained at ranch of origin through D28; fenc is fenceline weaned (FL); and flap is nose-flap (NF). Time points are different from figures 1 and 2. In this figure, time 0 reflects weaning, with time -2 representing base weight at time of study initiation (first separation from dam for the SEP group occurred immediately after this weighing); time -1 represents time of second separation for SEP group and placement of nose flaps for NF group; time 1 is D7; time 2 is D14; and time 3 is D28.



Supplemental figure S5: Actual weights of calves from location #2, presented as main treatment groups (no shipment classification). Weaning method designations are different from those used in the manuscript. 24hr is the SEP group, which had 24 hour separation from dam prior to weaning; ablv is AW-I, which were abruptly weaned and immediately shipped; abst is AW-D, which were weaned abruptly but remained at ranch of origin through D28; fenc is fenceline weaned (FL); and flap is nose-flap (NF). Time points are different from figures 1 and 2. In this figure, time 0 reflects weaning, with time -2 representing base weight at time of study initiation (first separation from dam for the SEP group occurred immediately after this weighing); time -1 represents time of second separation for SEP group and placement of nose flaps for NF group; time 1 is D7; time 2 is D14; and time 3 is D28.