Compare_cohorts

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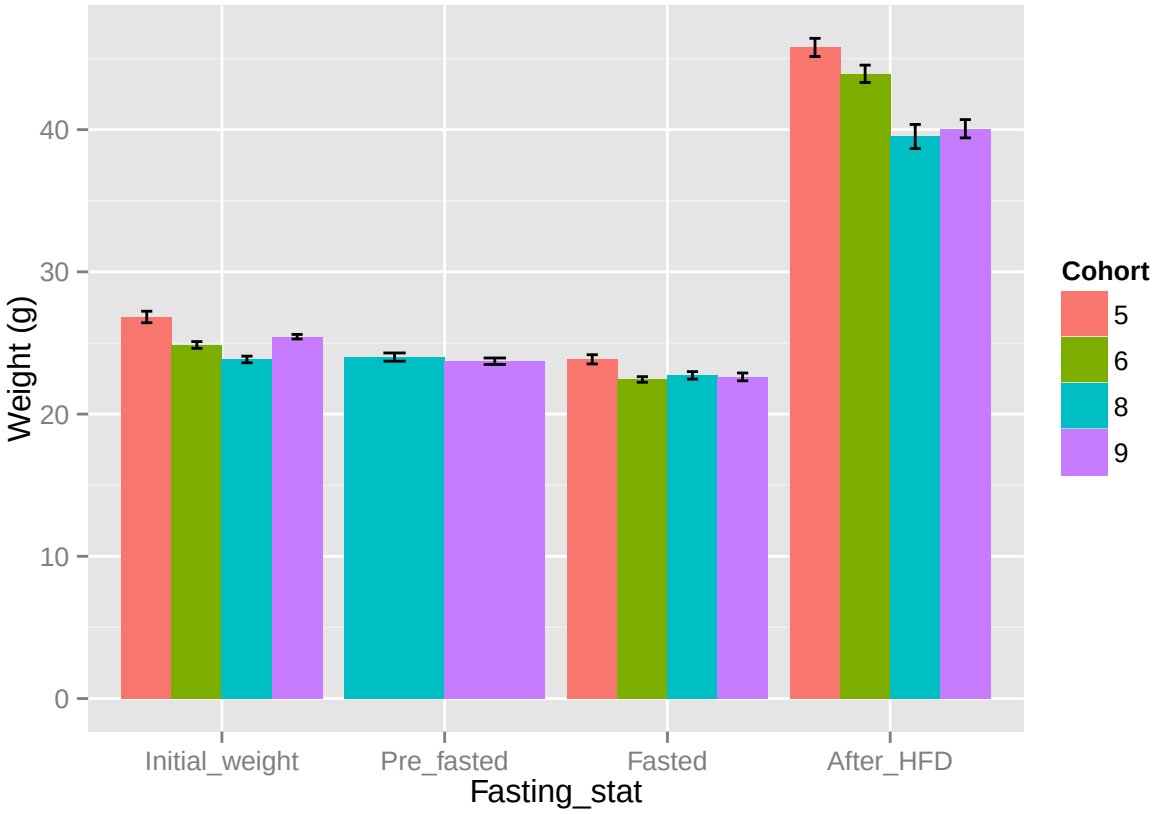
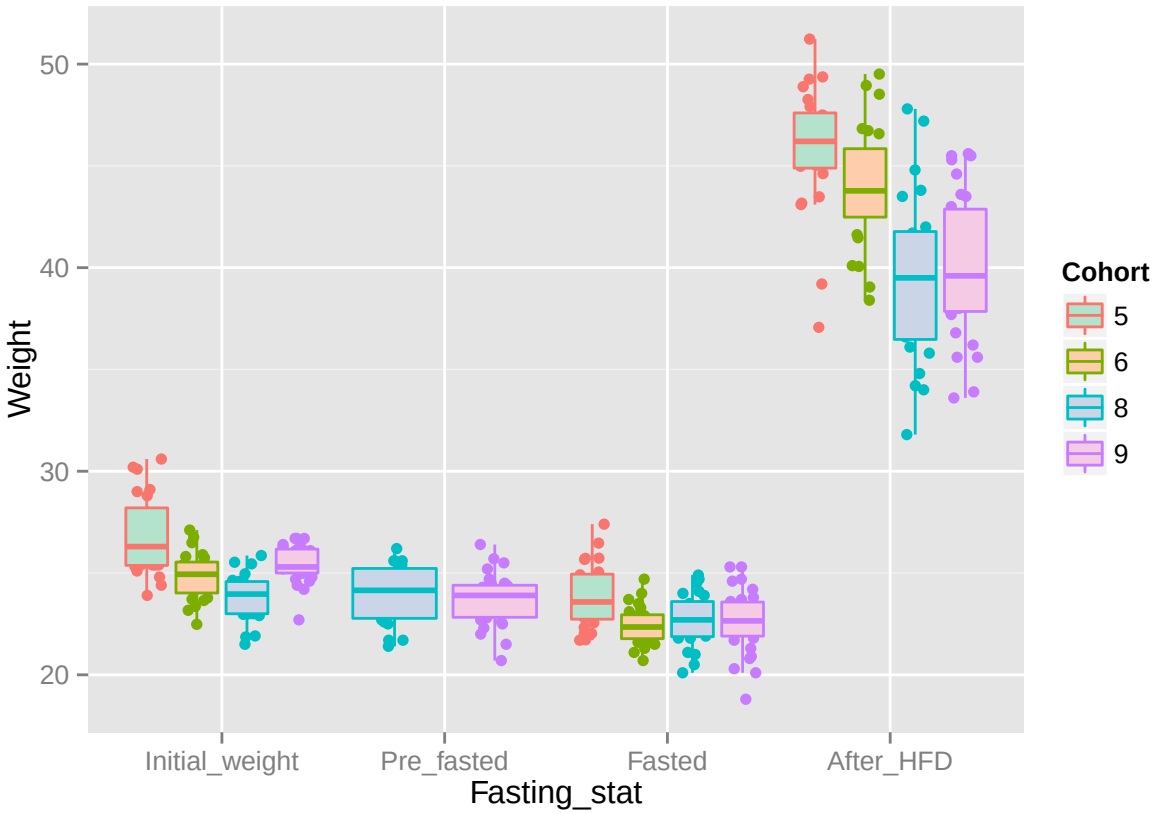
November 4, 2015

This script was most recently run on Fri Nov 6 17:51:24 2015. This script is to compare the mice body weight across different cohorts. The script also explores the relationship between initial weight, weight loss and the weights after HFD.

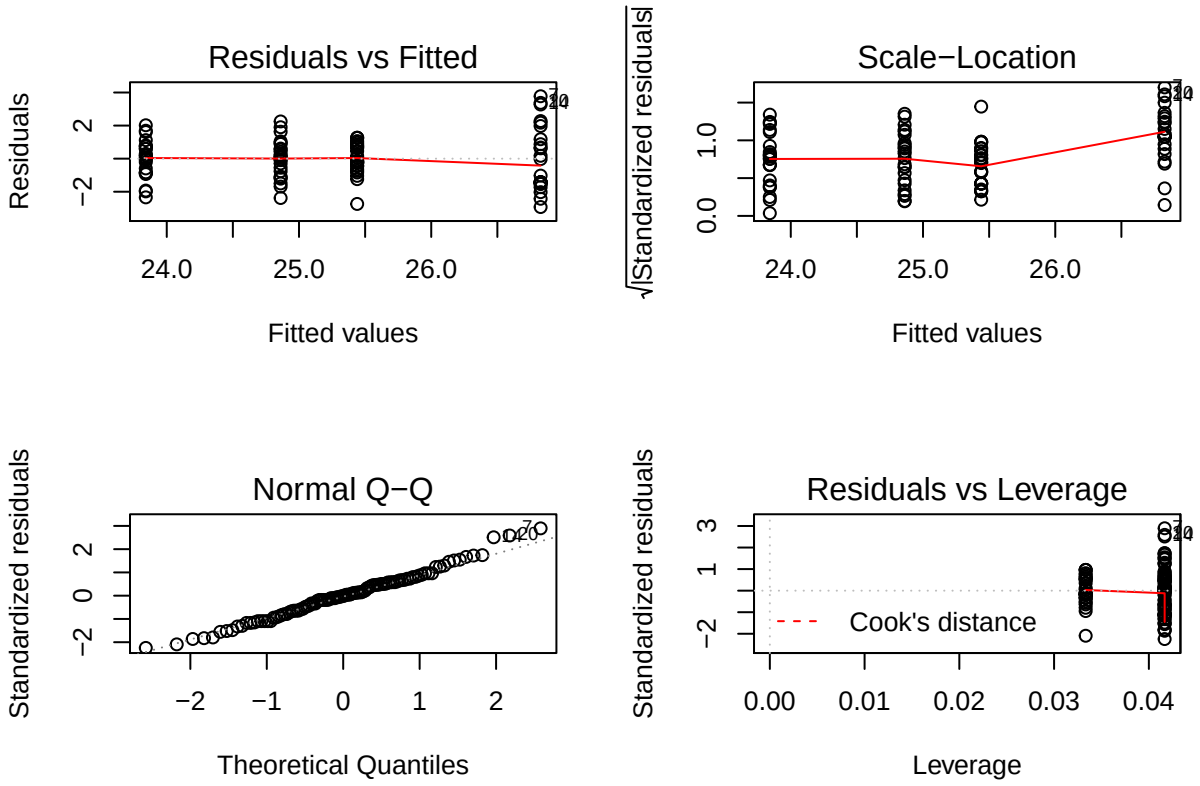
Weight data from cohort 5 and 6 were read in from ../data/processed/fasting_weights_file.csv.

Weight data from cohort 8 and 9 were read in from ../data/raw/Cohort_8_Raw_Data.csv and ../data/raw/Cohort_9_Raw_Data.csv.




50
40
30
20
Weight
Initial_weight
Pre_fasted
Fasted
After_HFD
Fasting_stat
Cohort
5
6
8
9

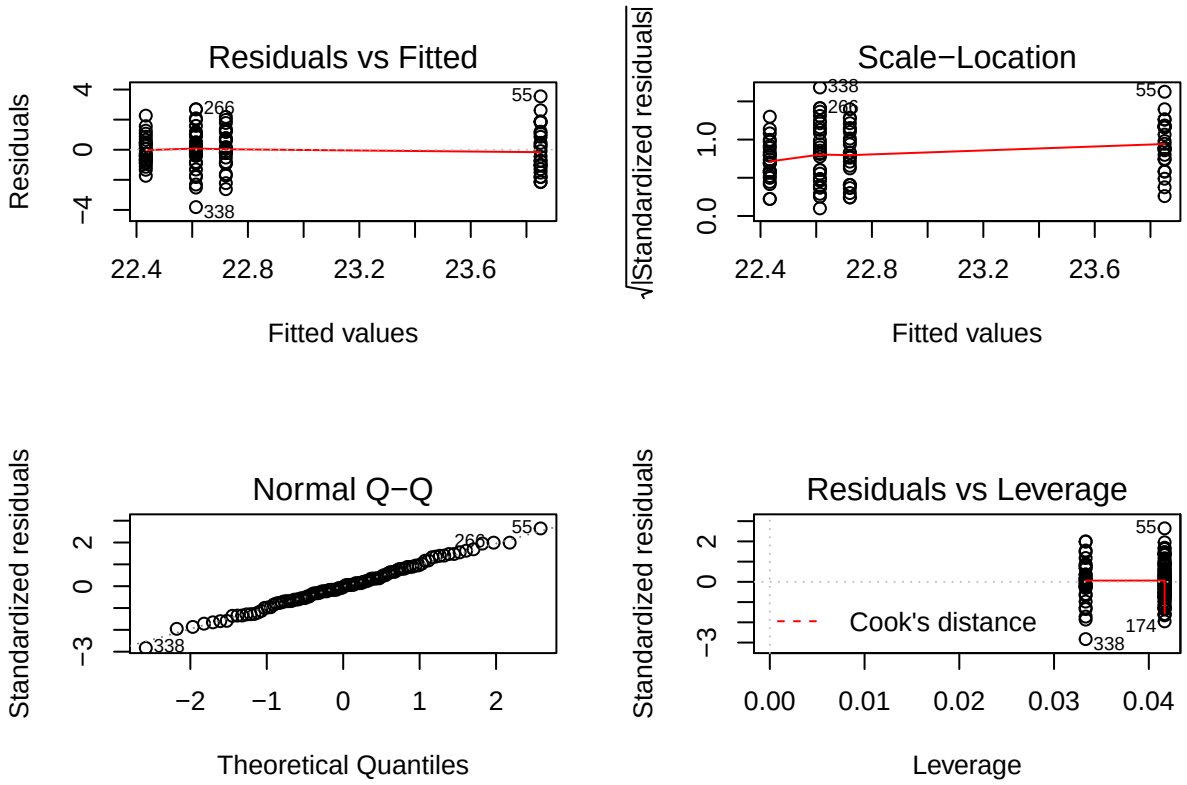
Tukey post-hoc analysis of body weight



[1]

"Tukey's post-hoc pairwise comparisons of Ininital weight"

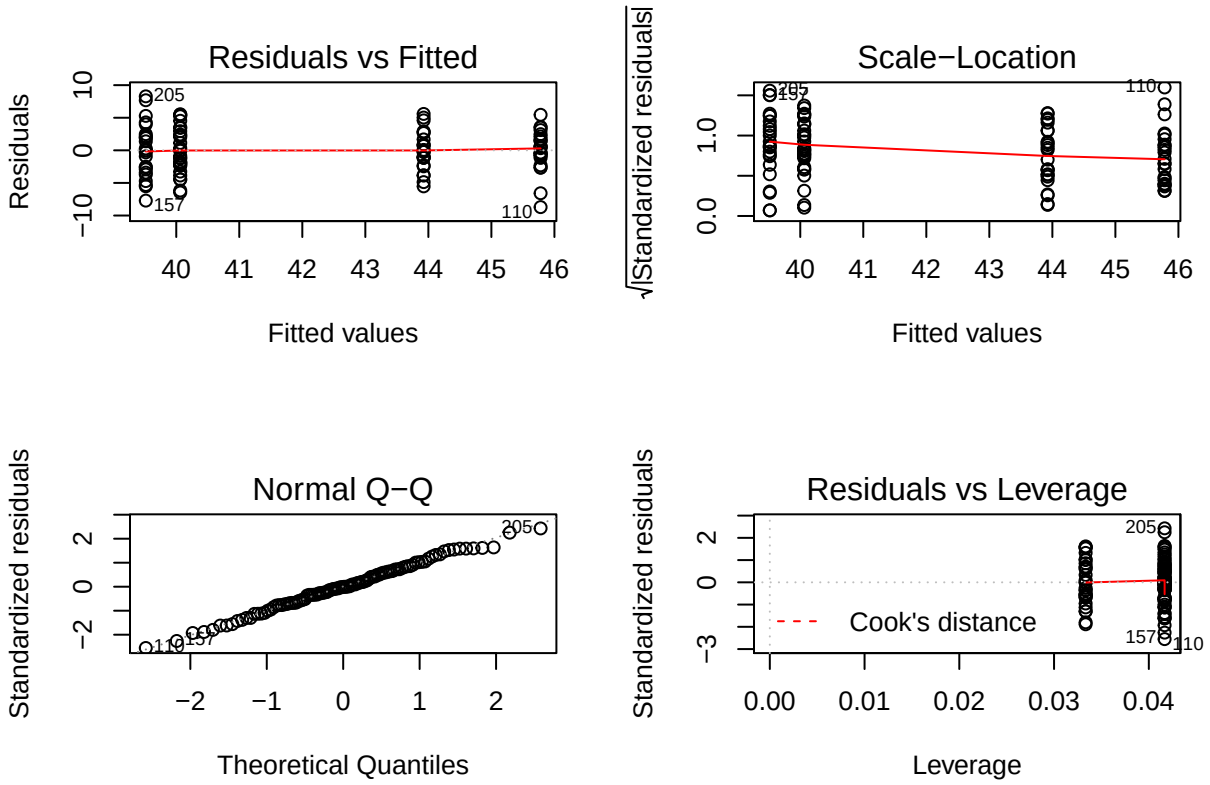
	diff	lwr	upr	p adj
6-5	-1.97	-2.97	-0.96	0.00
8-5	-2.99	-3.99	-1.98	0.00
9-5	-1.39	-2.34	-0.43	0.00
8-6	-1.02	-2.02	-0.01	0.05
9-6	0.58	-0.37	1.53	0.39
9-8	1.60	0.65	2.55	0.00



[1]

"Tukey's post-hoc pairwise comparisons of Fasted weight"

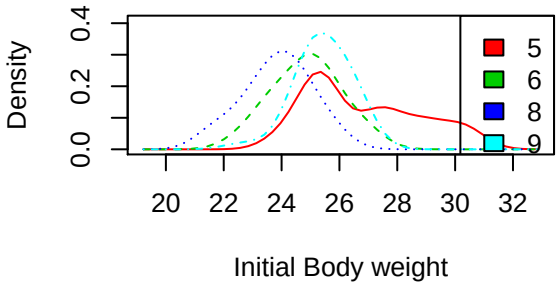
	diff	lwr	upr	p adj
6-5	-1.42	-2.45	-0.38	0.00
8-5	-1.13	-2.16	-0.10	0.03
9-5	-1.24	-2.22	-0.26	0.01
8-6	0.29	-0.75	1.32	0.89
9-6	0.18	-0.80	1.16	0.96
9-8	-0.11	-1.09	0.87	0.99

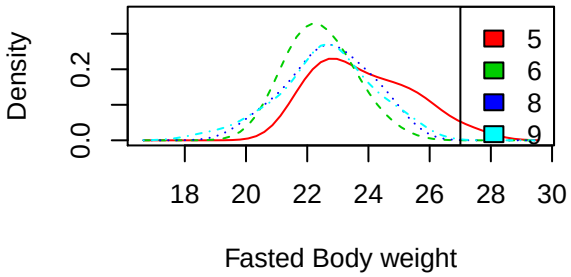


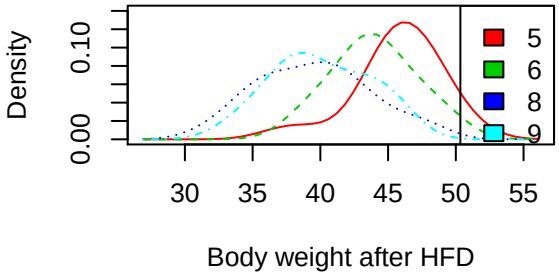
[1]

"Tukey's post-hoc pairwise comparisons of Fasted weight"

	diff	lwr	upr	p adj
6-5	-1.86	-4.49	0.77	0.26
8-5	-6.26	-8.89	-3.63	0.00
9-5	-5.72	-8.21	-3.22	0.00
8-6	-4.41	-7.04	-1.78	0.00
9-6	-3.86	-6.36	-1.37	0.00
9-8	0.55	-1.95	3.04	0.94

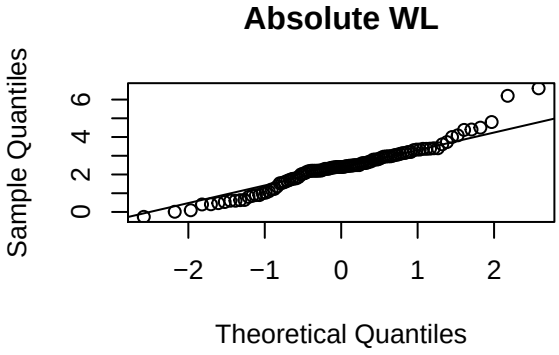


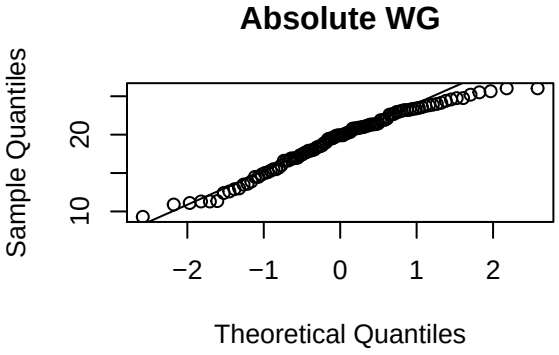


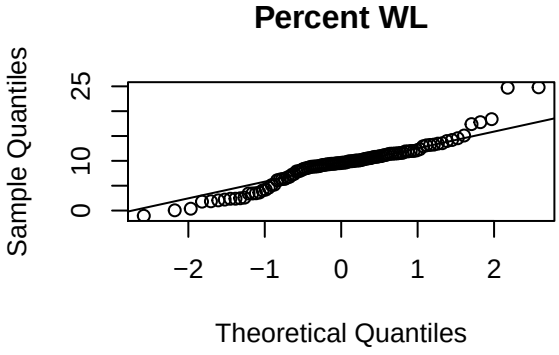


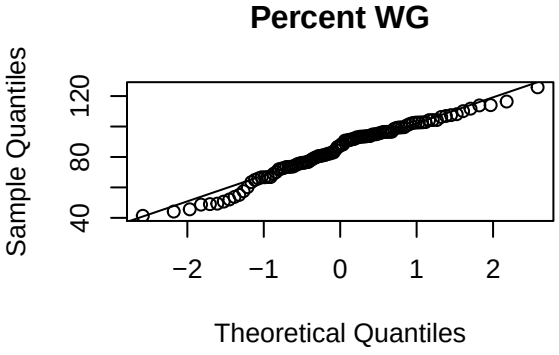
Overall, body weight appeared to be normally distributed across different feeding stages, except for cohort 5. This may be due to one or two mice with outlier weights.

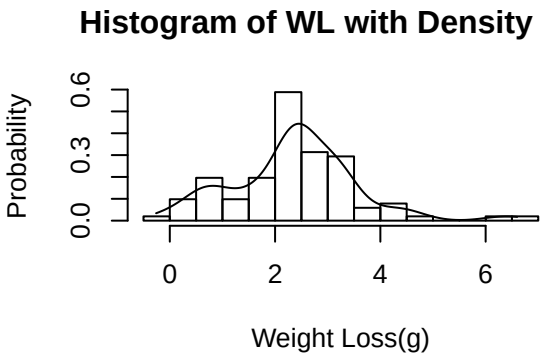
Checking the normality of weight loss and weight gain

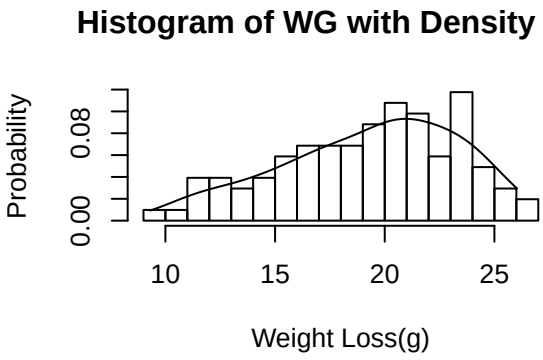


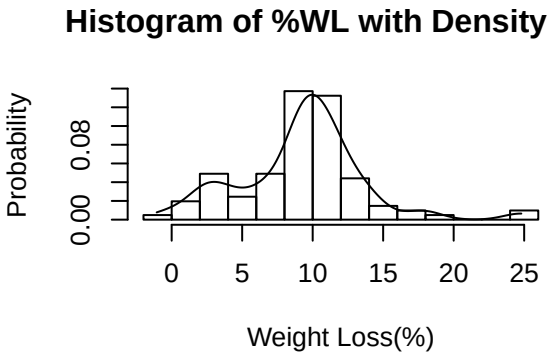


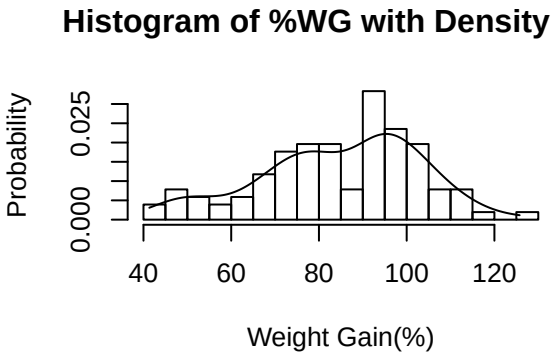




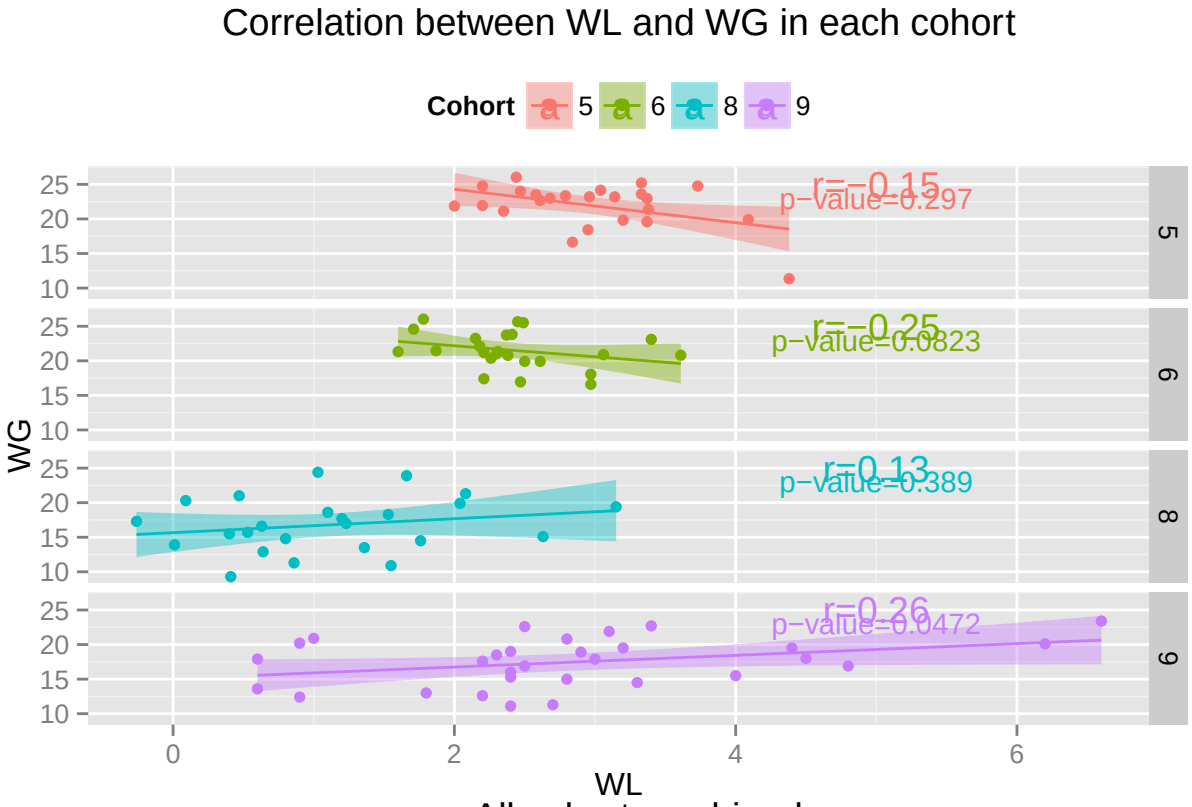

Histogram of WL with Density Plot
Probability
0.0
0.3
0.6
0
2
4
6
Weight Loss(g)

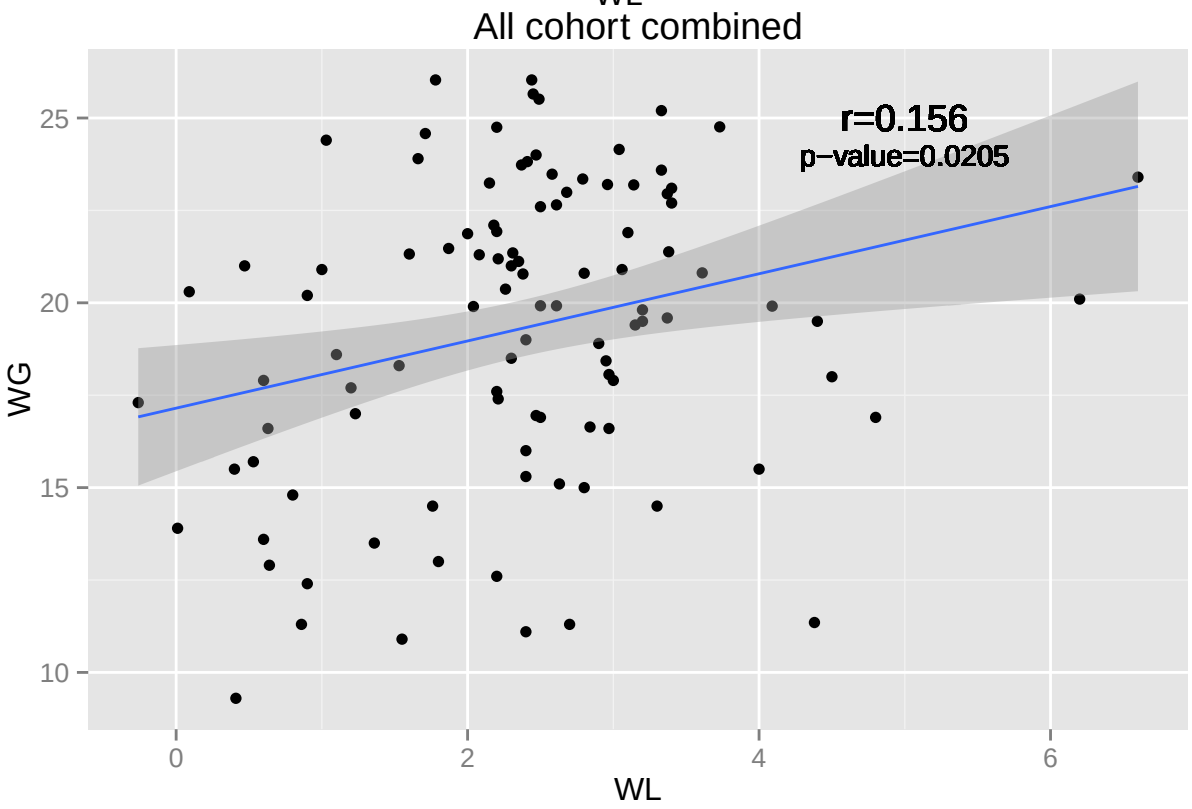

Histogram of WG with Density Plot
Probability
0.00
0.08
10
15
20
25
Weight Loss(g)

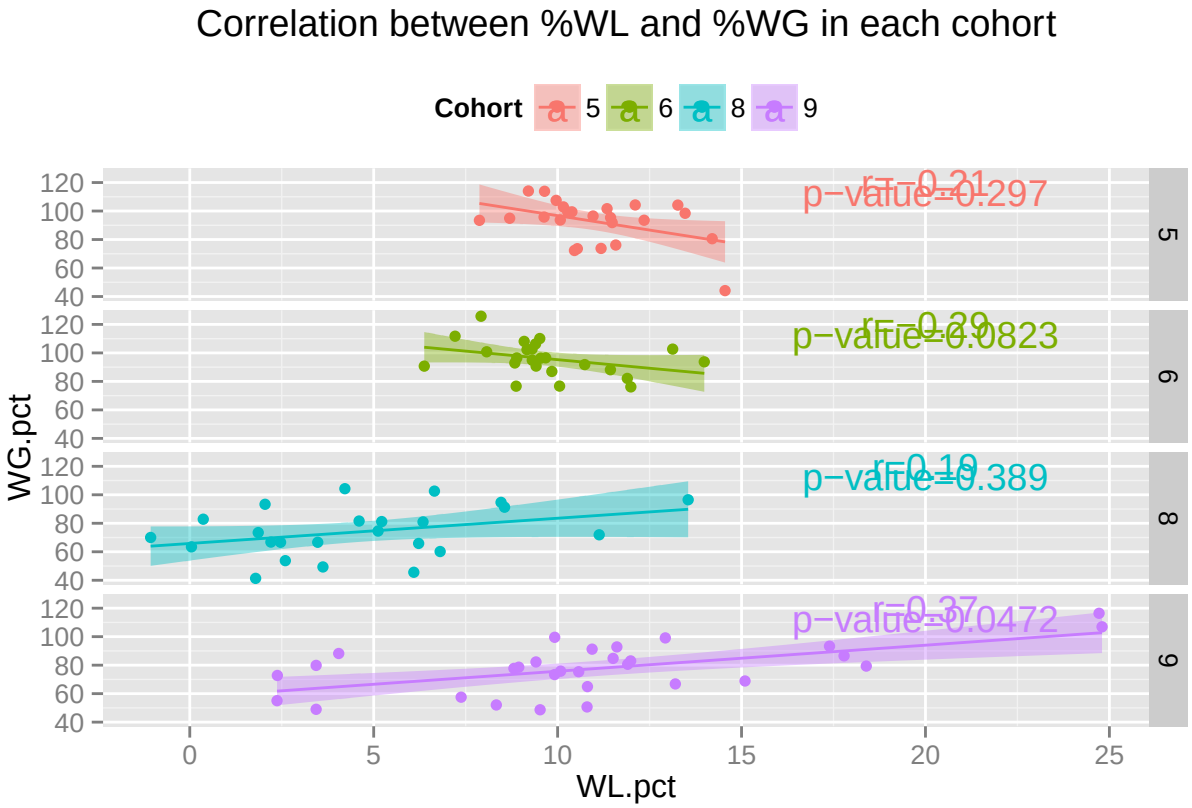

Histogram of %WL with Density Plot
Probability
0.00
0.08
0
5
10
15
20
25
Weight Loss(%)

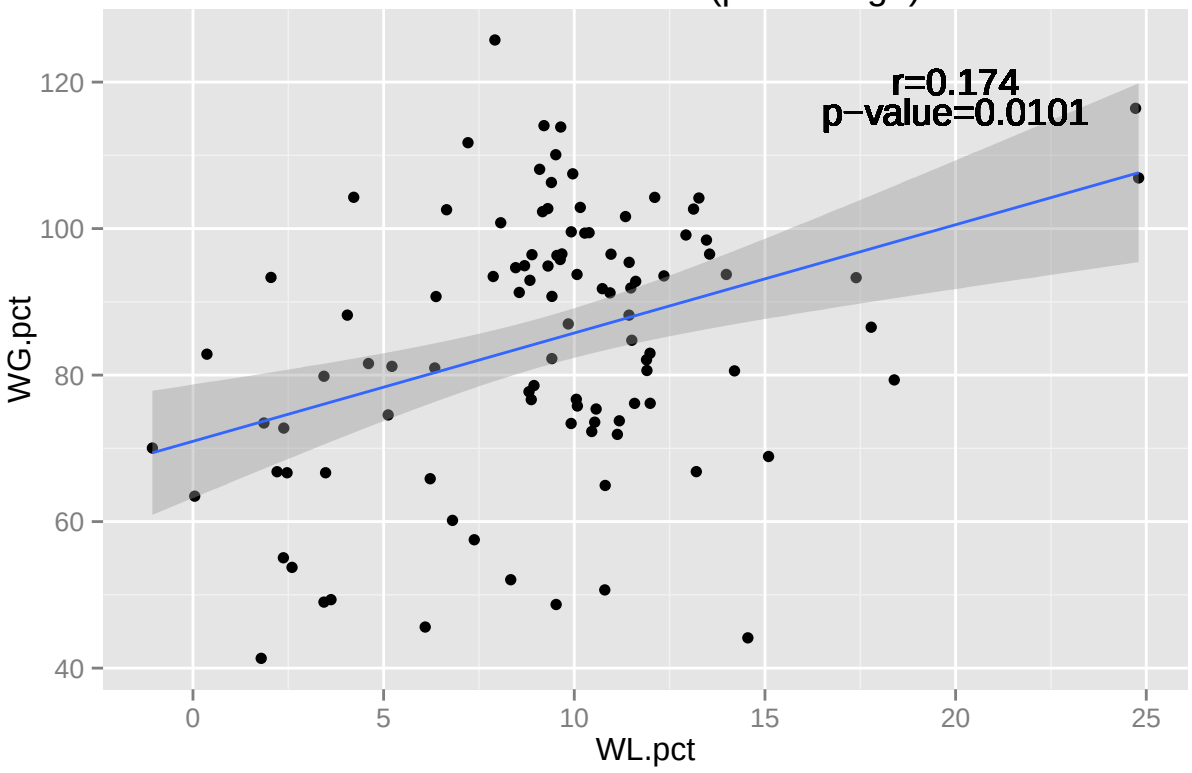

Histogram of %WG with Density Plot
Probability
0.000
0.025
40
60
80
100
120
Weight Gain(%)

Relationship between Weight Loss after fasting and Weight Gain after HFD






Correlation between %WL and %WG in each cohort
Cohort
5
6
8
9
r=-0.21
p−value=0.297
r=-0.39
p−value=0.0823
r=0.19
p−value=0.389
r=0.37
p−value=0.0472
WG.pct
WL.pct

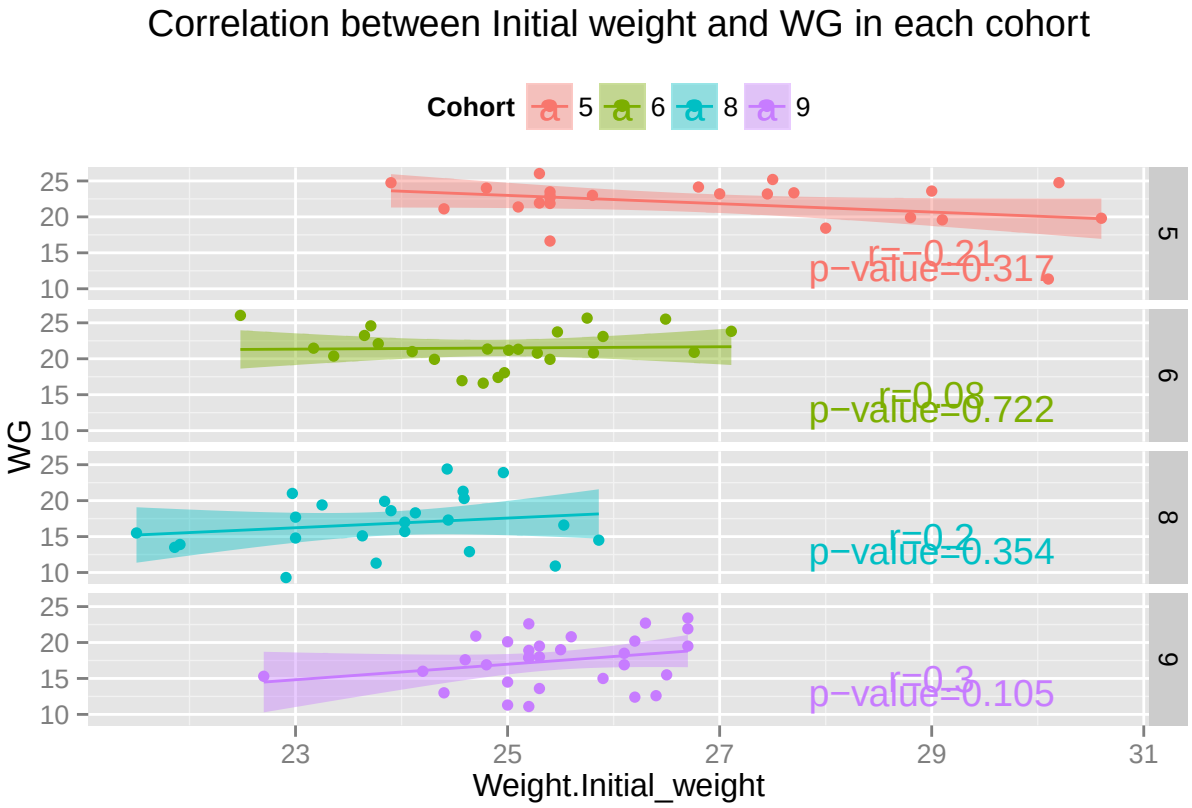

All cohort combined (percentage)
r=0.174
p−value=0.0101
WG.pct
WL.pct

Relationship between Initial Weight and HFD Weight

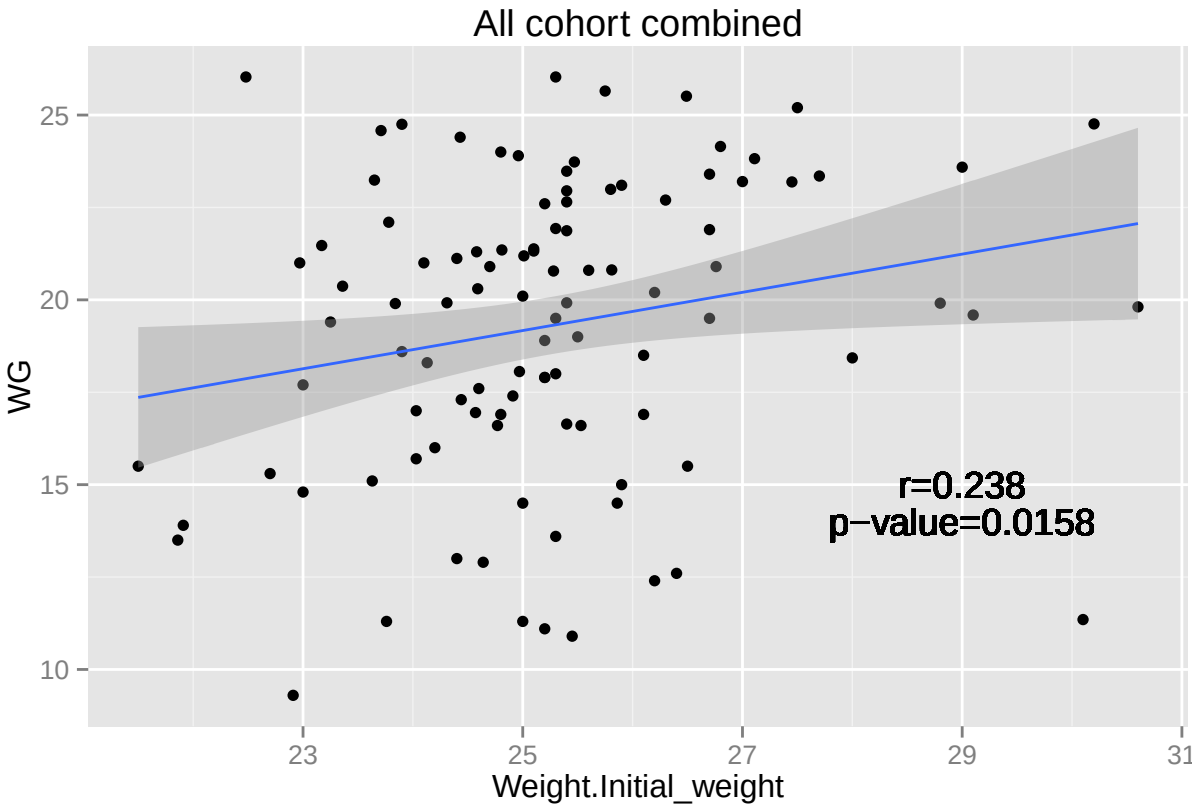
```
## Warning in cor.test.default(Weight.Initial_weight, WG, method =
## "spearman"): Cannot compute exact p-value with ties
```

```
## Warning in cor.test.default(Weight.Initial_weight, WG, method =
## "spearman"): Cannot compute exact p-value with ties
```

```
## Warning in cor.test.default(Weight.Initial_weight, WG, method =
## "spearman"): Cannot compute exact p-value with ties
```




```
## Warning in cor.test.default(weight.wide$Weight.Initial_weight, weight.wide
## $WG, : Cannot compute exact p-value with ties
```




```
##
##  Spearman's rank correlation
##
## data:  weight.wide$Weight.Initial_weight and weight.wide$WG
## 1000 replicates
##
## 95 percent confidence interval:
##  0.04284926 0.42932306
## sample estimates:
##       rho
## 0.2384575

##
## 1 - alpha = 0.95 two-sided CI for tau:
## 0.032, 0.315
```

Session Information

```
## R version 3.2.2 (2015-08-14)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: OS X 10.10.5 (Yosemite)
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
```

```
##
## other attached packages:
##  [1] NSM3_1.3             survival_2.38-3      partitions_1.9-18
##  [4] MASS_7.3-44          combinat_0.0-8       RVAideMemoire_0.9-51
##  [7] sm_2.2-5.4           xtable_1.8-0         ggplot2_1.0.1
## [10] plyr_1.8.3           reshape2_1.4.1
##
## loaded via a namespace (and not attached):
##  [1] binom_1.1-1         splines_3.2.2       BSDA_1.01
##  [4] gtools_3.5.0        Formula_1.2-1       sp_1.2-1
##  [7] stats4_3.2.2        Rfit_0.22.0         np_0.60-2
## [10] metafor_1.9-8       latticeExtra_0.6-26 coin_1.1-1
## [13] yaml_2.1.13         LearnBayes_2.15     lattice_0.20-33
## [16] quantreg_5.19       digest_0.6.8        RColorBrewer_1.1-2
## [19] minqa_1.2.4         colorspace_1.2-6    sandwich_2.3-4
## [22] htmltools_0.2.6     Matrix_1.2-2        klaR_0.6-12
## [25] fANCOVA_0.5-1       SparseM_1.7         mvtnorm_1.0-3
## [28] scales_0.3.0        km.ci_0.5-2         cubature_1.1-2
## [31] lme4_1.1-10         MatrixModels_0.4-1  mgcv_1.8-9
## [34] gmp_0.5-12          car_2.1-0           SemiPar_1.0-4.1
## [37] TH.data_1.0-6       nnet_7.3-11         agricolae_1.2-3
## [40] pbkrtest_0.4-2      proto_0.3-10        magrittr_1.5
## [43] deldir_0.1-9        evaluate_0.8        ash_1.0-15
## [46] nlme_3.1-122        foreign_0.8-66      SuppDists_1.1-9.1
## [49] tools_3.2.2         waveslim_1.7.5      formatR_1.2.1
## [52] multcomp_1.4-1      stringr_1.0.0       munsell_0.4.2
## [55] cluster_2.0.3       ade4_1.7-2          grid_3.2.2
## [58] nloptr_1.0.4        labeling_0.3        rmarkdown_0.8.1
## [61] boot_1.3-17         gtable_0.1.2        codetools_0.2-14
## [64] epitools_0.5-7      polynom_1.3-8       AlgDesign_1.1-7.3
## [67] gridExtra_2.0.0     zoo_1.7-12          knitr_1.11
## [70] nortest_1.0-4       Hmisc_3.17-0        spdep_0.5-88
## [73] modeltools_0.2-21   stringi_1.0-1       parallel_3.2.2
## [76] Rcpp_0.12.1         rpart_4.1-10        acepack_1.3-3.3
## [79] coda_0.18-1
```