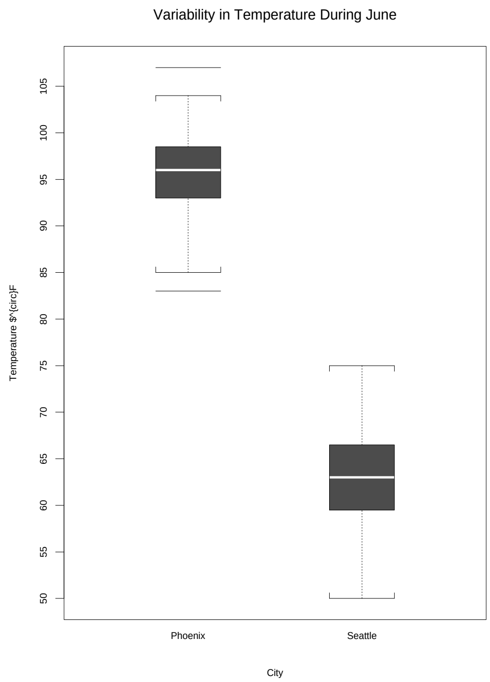


A comparison of the population variances yields:
$H_o : \sigma_P^2 = \sigma_S^2$ versus $H_a : \sigma_P^2 \neq \sigma_S^2$
$s_P^2/s_S^2 = 1.26 \Rightarrow p - value > .25 \Rightarrow$
Fail to reject H_o
A comparison of the population means :
$H_o : \mu_P = \mu_S$ versus $H_a : \mu_P \neq \mu_S$
$t = 16.76$ with df=38 $\Rightarrow p - value < 0.0005$
Reject H_o

Chapter 8: Inferences about More Than Two Population Central Values

8.1 a. Yes

b. $H_o : \mu_A = \mu_B = \mu_C = \mu_D$ versus H_a : Difference in $\mu' s$
Reject H_o if $F \geq F_{.05,3,20} = 3.10$

$SSW = 0.8026$
$\bar{y}_{..} = 0.0826 \Rightarrow$
$SSB = 0.5838 \Rightarrow$
$F = 4.85 > 3.10 \Rightarrow$
Reject H_o

c. $p - value = P(F_{3,20} \geq 4.85) \Rightarrow 0.01 < p - value < 0.025$

8.3 $H_o : \mu_{NE} = \mu_{SE} = \mu_{NW} = \mu_{SW}$ versus H_a : Difference in $\mu' s$

Reject H_o if $F \geq F_{.05,3,20} = 3.10$

$SSW = 1.3367$

$\bar{y}_{..} = 1.28925 \Rightarrow$

$SSB = 5.8312$

$F = 29.08 > 3.10 \Rightarrow$

Reject H_o

8.5 a. $H_o : \mu_A = \mu_B = \mu_C$ versus H_a : Difference in $\mu' s$
Reject H_o if $F \geq F_{.05,2,21} = 3.47$
$F = 9.98 > 10.09 \Rightarrow$
Reject H_o

b. 95% C.I. on $\mu_A : (-0.592, 13.512)$
95% C.I. on $\mu_B : (5.288, 19.392)$
95% C.I. on $\mu_C : (20.298, 34.402)$

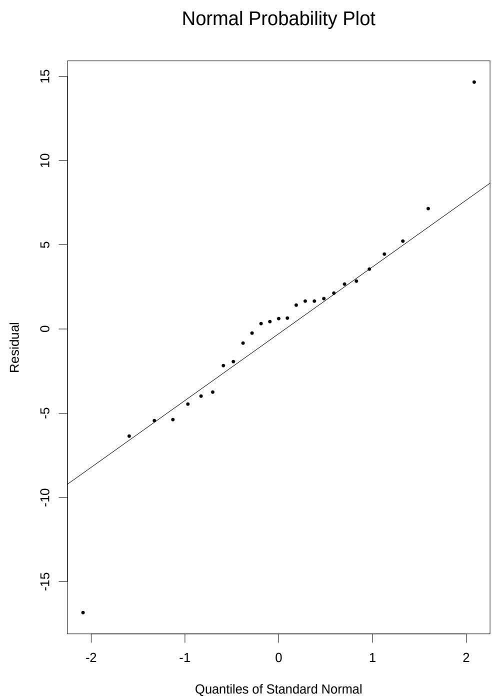
c. $H_o : \mu_A = \mu_B = \mu_C$ versus H_a : Difference in $\mu' s$
Reject H_o if $F \geq F_{.05,2,21} = 3.47$
Using the transformed data: $F = 10.00 > 3.47 \Rightarrow$
Reject H_o The following C.I.'s are on the mean of the logarithm of the hours of relief $\mu_{i'}$:
95% C.I. on $\mu_{A'} : (1.305, 2.195)$
95% C.I. on $\mu_{B'} : (1.985, 2.875)$
95% C.I. on $\mu_{C'} : (2.655, 3.545)$

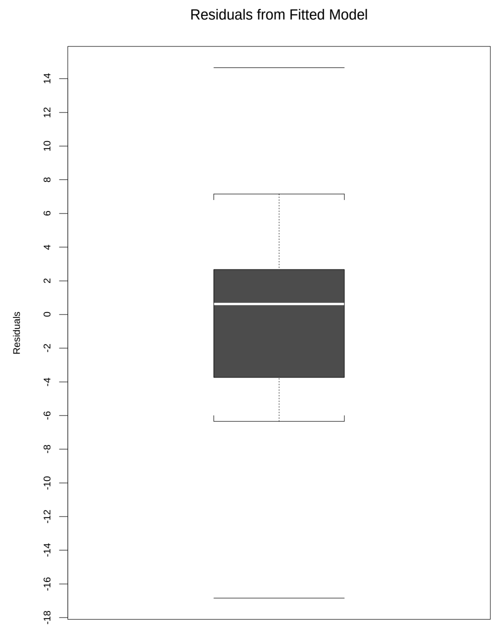
d. The test of hypotheses using the raw and transformed yielded the same conclusion.

e. The inverse transformations involves exponentiating the endpoints of the C.I.:
95% C.I. on μ_A : $(3.688, 8.980)$
95% C.I. on μ_B : $(7.279, 17.725)$
95% C.I. on μ_C : $(14.225, 34.640)$
There is a considerable difference in the two sets of C.I.'s.

8.8 a. The Kruskal-Wallis yields $H = 21.32 > 9.21$ with $df = 2 \Rightarrow p - value < 0.001$. Thus, reject H_o

b. The box plots and normal probability plot are given here:





c. The AOV table is given here:

Source	df	SS	MS	F	p-value
Supplier	2	10723.8	5361.9	161.09	0.000
Error	24	798.9	33.3		
Total	26	11522.7			

Reject H_o if $F \geq 3.40$

$F = 161.09 > 3.40$, reject H_o

d. 95% C.I. on $\mu_A : (185.26, 193.20)$

95% C.I. on $\mu_B : (152.31, 160.25)$

95% C.I. on $\mu_C : (199.97, 207.91)$

8.9 a. The summary statistics are given here for the observed data:

Line	n	Mean	Std. Dev.
1	5	39.40	7.92
2	5	44.20	10.40
3	5	52.00	26.00
4	5	40.80	10.13
5	5	53.20	17.48

$F_{max} = 10.78 < 59 \Rightarrow$ There is not significant evidence of a difference in the 5 variances.

b. The summary statistics are given here for the transformed data:

Line	n	Mean	Std. Dev.
1	5	6.25	0.619
2	5	6.61	0.784
3	5	6.93	2.228
4	5	6.35	0.791
5	5	7.22	1.172

$F_{max} = 12.96 < 59 \Rightarrow$

c. $F = 0.81$ with $df = 4, 20 \Rightarrow p - value > 0.25 \Rightarrow$

8.10 The Kruskal-Wallis test yields $H = 4.32$ with $df = 4 \Rightarrow 0.10 < p - value < 0.90 \Rightarrow$

8.11 a. $\bar{y}_{..} = 88.1667$
SSB = 463.40
SSW = 4577.65
F = 4.40 with df = 2,87 $\Rightarrow 0.01 < p - value < 0.025 < 0.05 \Rightarrow$

b. 95% C.I. on $\mu_1 : 87.57, 92.83)$
95% C.I. on $\mu_2 : (86.67, 91.93)$
95% C.I. on $\mu_3 : (82.37, 87.63)$

8.13 a. The Kruskal-Wallis test yields: $H' = 26.62$ with df = 3 $\Rightarrow p - value < 0.001 \Rightarrow$

b. The two procedures yield equivalent conclusions.

8.19 F = 6.65 with df = 2,33 $\Rightarrow 0.001 < p - value < 0.005 < 0.05 \Rightarrow$

8.21 a. F = 54.70 with df = 3,36 $\Rightarrow p - value < 0.001 < 0.05 \Rightarrow$

b. 95% C.I. on $\mu_A : (20.20, 26.54)$
95% C.I. on $\mu_B : (5.41, 11.75)$
95% C.I. on $\mu_C : (11.76, 18.10)$
95% C.I. on $\mu_D : (32.18, 38.52)$

c. F= 2.10 with df = 3,36 $\Rightarrow 0.05 < 0.10 < p - value < 0.25 \Rightarrow$

8.25 The Kruskal-Wallis test yields $H' = 25.54$ with df = 4 $\Rightarrow p - value < 0.001$

8.27 a. The equal variance condition has been violated.

b. F = 20.71 with df = 4,25 $\Rightarrow p - value < 0.001 < 0.05 \Rightarrow$

8.31 The Kruskal-Wallis test yields identical results for the transformed and original data
$H = 9.89$ with df = 2 $\Rightarrow 0.005 < p - value < 0.01 < 0.05$