Daniel Prusinski

412

Appendix 1 for Assignment 4 – Hierarchical Models

Output 1: Metadata

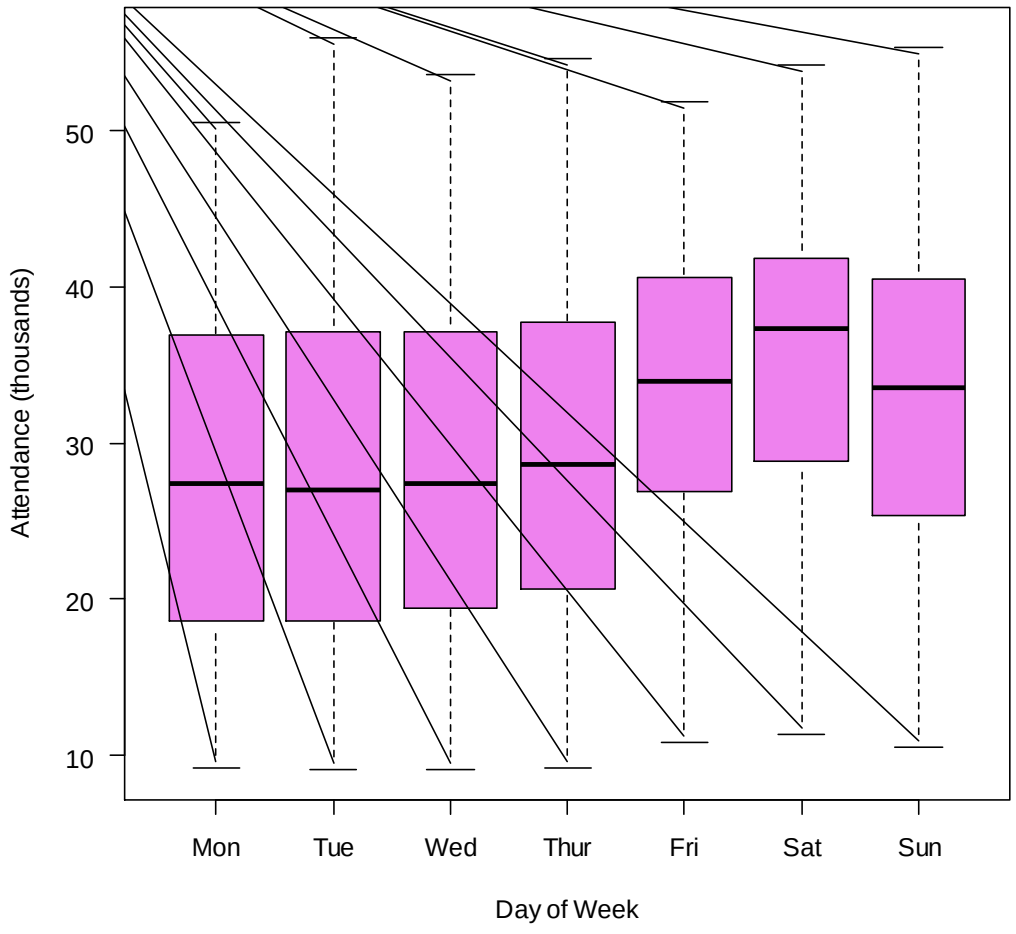
```
'data.frame':   2421 obs. of  14 variables:
 $ Year     : int  2012 2012 2012 2012 2012 2012 2012 2012 2012 2012 ...
 $ Team     : Factor w/ 30 levels "Arizona Diamondbacks",..: 3 3 3 3 3 3 3 3 3 3 ...
 $ Month    : Factor w/ 7 levels "April","August",..: 1 1 1 1 1 1 1 1 1 1 ...
 $ Day      : int  6 7 8 9 10 11 24 25 26 27 ...
 $ DayofWeek: Factor w/ 7 levels "Friday","Monday",..: 1 3 4 2 6 7 6 7 5 1 ...
 $ Opponent : Factor w/ 30 levels "Arizona Diamondbacks",..: 17 17 17 19 19 19 29 29 29 20 ...
 $ Temp     : int  59 63 68 65 62 53 60 70 64 60 ...
 $ TypeOfDay: Factor w/ 4 levels "Clear Skies",..: 1 1 1 2 1 2 2 1 2 1 ...
 $ Night    : int  0 1 0 1 1 1 1 1 1 1 ...
 $ Attend   : int  46773 31532 14738 25478 24659 22919 11058 10415 13725 18297 ...
 $ BobbleHd : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Headgear : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Shirts   : int  0 0 0 0 0 0 0 0 1 0 ...
 $ Firewks  : int  0 0 0 0 0 0 0 0 0 0 ...
```

Output 2: Splitting Data into Training and Testing

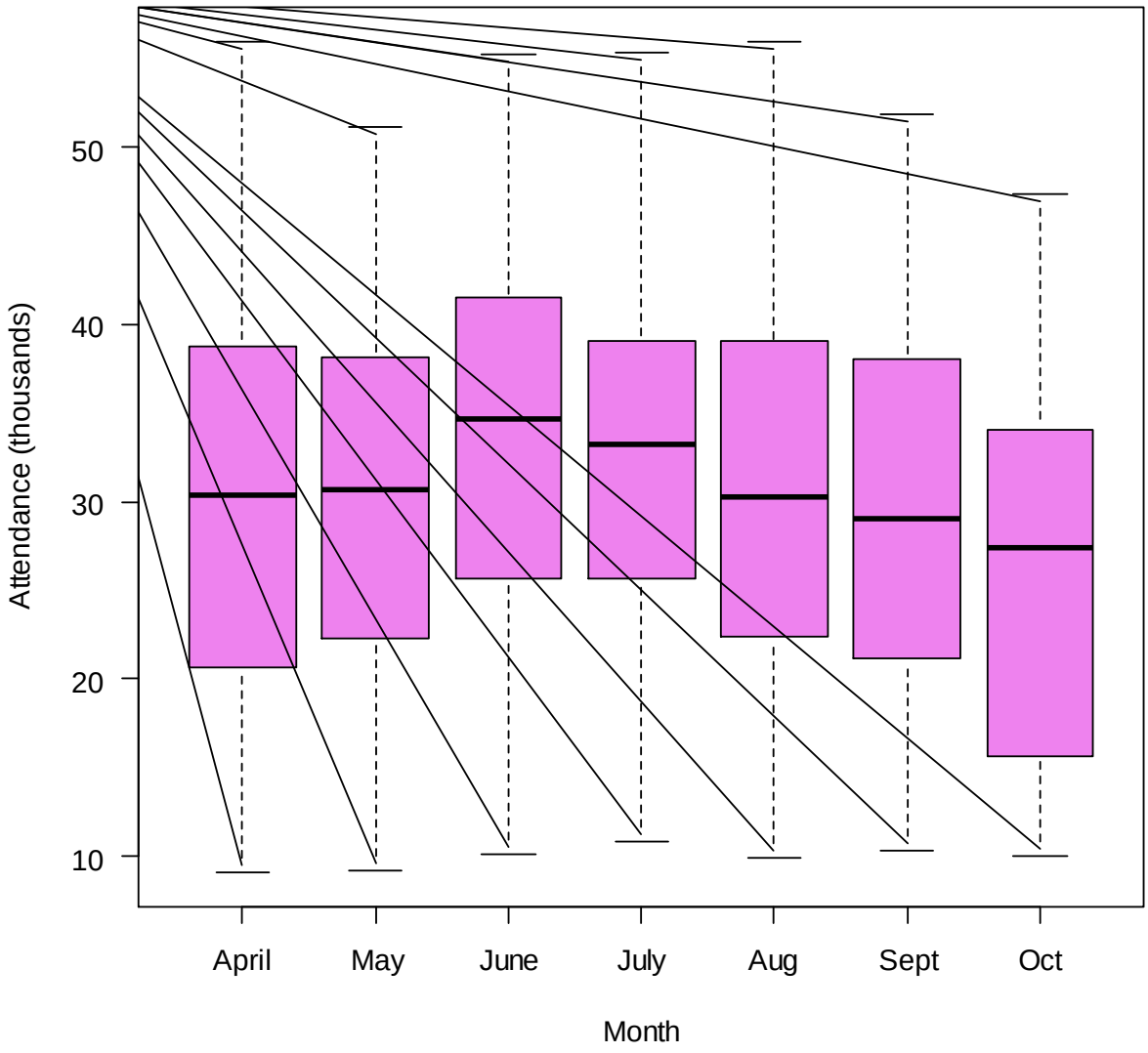
```
> dodgers.train <- subset(dodgers, training_test == "TRAIN")
> print(str(dodgers.train)) # check training data frame
'data.frame':   1614 obs. of  15 variables:
 $ Year        : int  2012 2012 2012 2012 2012 2012 2012 2012 2012 2012 ...
 $ Team        : Factor w/ 30 levels "Arizona Diamondbacks",..: 3 3 3 3 3 3 3 3 3 3 ...
 $ Month       : Factor w/ 7 levels "April","August",..: 1 1 1 1 1 1 1 1 1 1 ...
 $ Day         : int  6 7 8 9 11 24 25 26 27 29 ...
 $ DayofWeek   : Factor w/ 7 levels "Friday","Monday",..: 1 3 4 2 7 6 7 5 1 4 ...
 $ Opponent    : Factor w/ 30 levels "Arizona Diamondbacks",..: 17 17 17 19 19 29 29 29 20 20 ...
 $ Temp        : int  59 63 68 65 53 60 70 64 60 64 ...
 $ TypeOfDay   : Factor w/ 4 levels "Clear Skies",..: 1 1 1 2 2 2 1 2 1 1 ...
 $ Night       : int  0 1 0 1 1 1 1 1 1 0 ...
 $ Attend      : int  46773 31532 14738 25478 22919 11058 10415 13725 18297 31793 ...
 $ BobbleHd    : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Headgear    : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Shirts      : int  0 0 0 0 0 0 0 1 0 0 ...
 $ Firewks     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ training_test: Factor w/ 2 levels "TRAIN","TEST": 1 1 1 1 1 1 1 1 1 1 ...
NULLM
> dodgers.test <- subset(dodgers, training_test == "TEST")
> print(str(dodgers.test)) # check test data frame
'data.frame':   807 obs. of  15 variables:
 $ Year        : int  2012 2012 2012 2012 2012 2012 2012 2012 2012 2012 ...
 $ Team        : Factor w/ 30 levels "Arizona Diamondbacks",..: 3 3 3 3 3 3 3 3 3 3 ...
```

```
 $ Month       : Factor w/ 7 levels "April","August",..: 1 1 5 5 5 4 4 4 4 4 ...
 $ Day         : int  10 28 8 11 27 9 10 26 29 30 ...
 $ DayofWeek   : Factor w/ 7 levels "Friday","Monday",..: 6 3 6 1 4 3 4 6 1 3 ...
 $ Opponent    : Factor w/ 30 levels "Arizona Diamondbacks",..: 19 20 28 27 12 21 21 13 8 8 ...
 $ Temp        : int  62 56 68 71 86 86 90 78 100 91 ...
 $ TypeOfDay   : Factor w/ 4 levels "Clear Skies",..: 1 4 2 1 2 2 1 1 1 2 ...
 $ Night       : int  1 1 1 1 0 0 0 1 1 0 ...
 $ Attend      : int  24659 26926 11263 26669 33919 46611 45267 24296 24779 35335 ...
 $ BobbleHd    : int  0 0 0 0 0 0 0 0 0 0 ...
 $ Headgear    : int  0 1 0 0 0 0 0 1 0 0 ...
 $ Shirts      : int  0 0 0 0 1 0 0 0 0 0 ...
 $ Firewks     : int  0 0 0 0 0 0 0 0 1 0 ...
 $ training_test: Factor w/ 2 levels "TRAIN","TEST": 2 2 2 2 2 2 2 2 2 2 ...
NULL
```

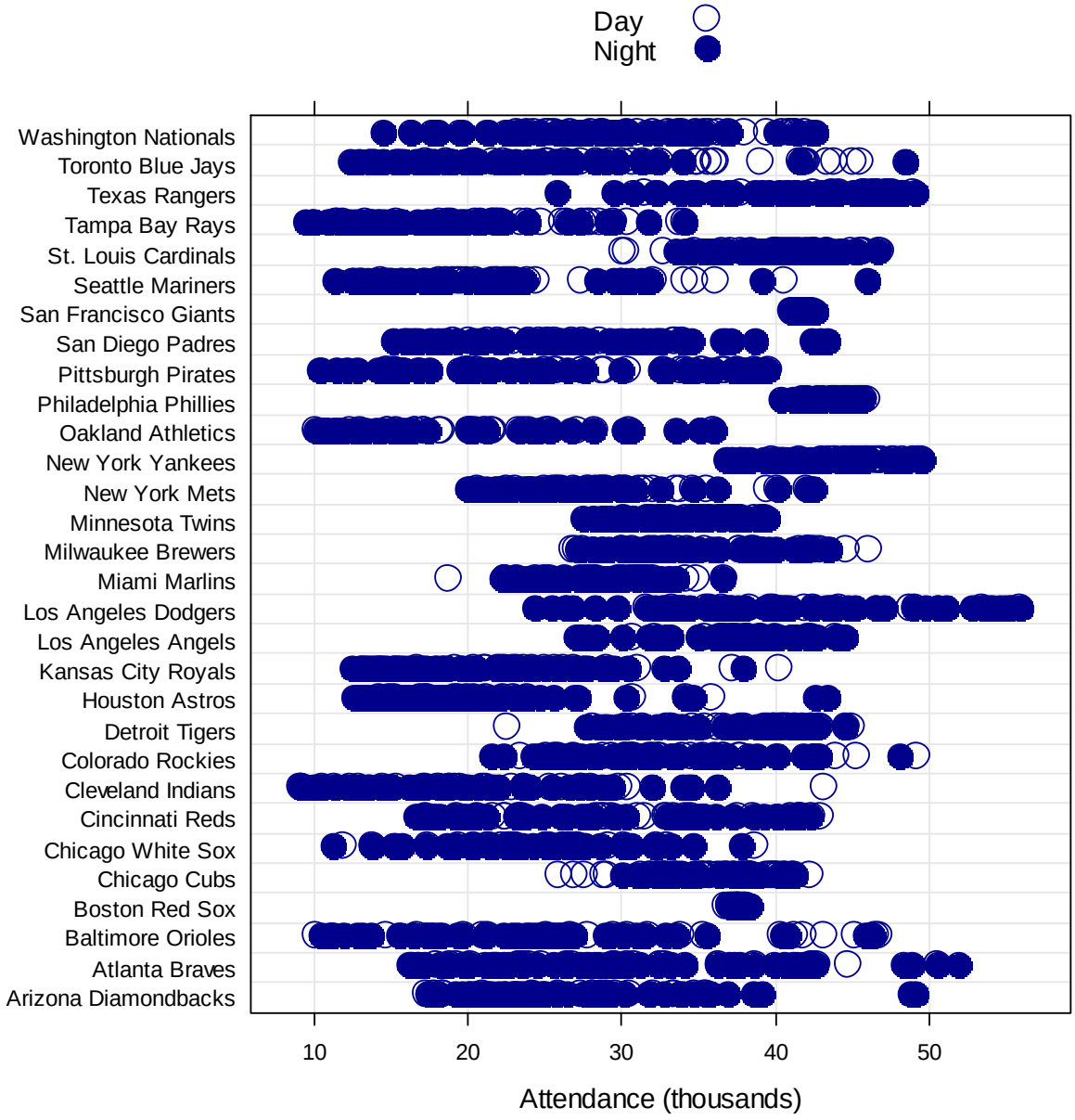
Output 3: Attendance by Day



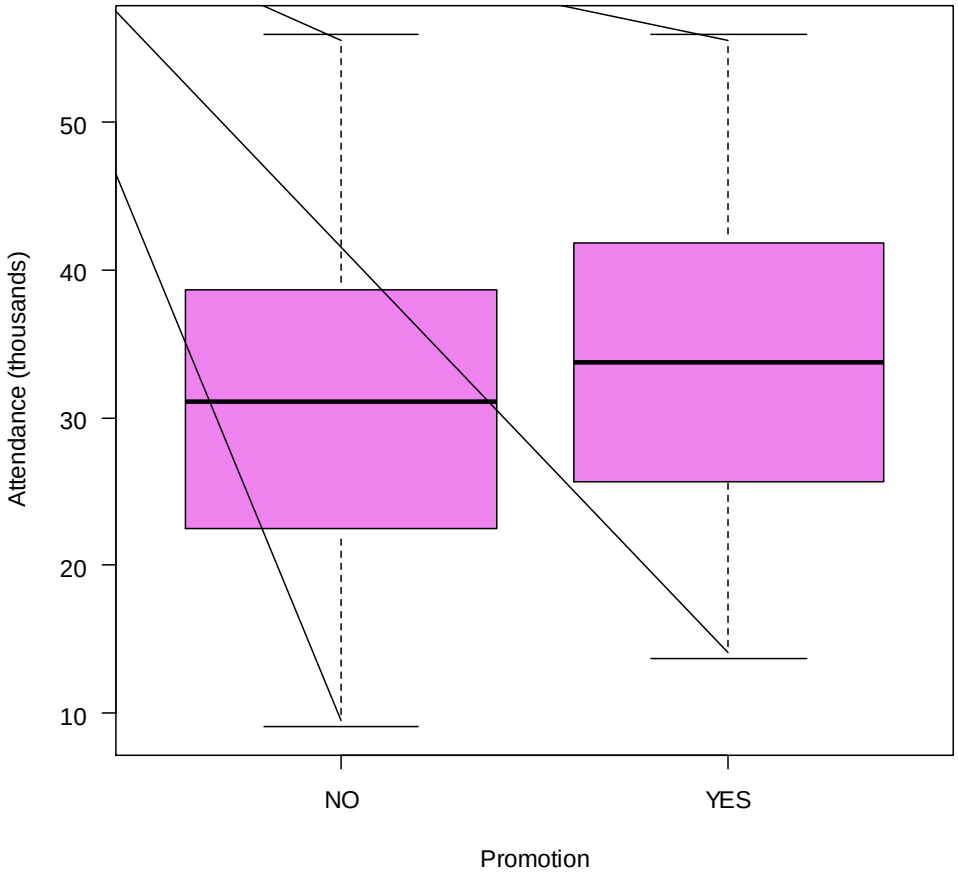
Output 4: Attendance by Month



Output 5: Team and Night/Day Attendance



Output 6: Promotion Attendance



Output 7: Stepwise Regression Model

Start: AIC=27602.39
Attend ~ Year + Team + Month + Day + DayofWeek + Opponent + Temp +
TypeOfDay + Night + BobbleHd + Headgear + Shirts + Firewks

Step: AIC=27602.39
Attend ~ Team + Month + Day + DayofWeek + Opponent + Temp + TypeOfDay +
Night + BobbleHd + Headgear + Shirts + Firewks

	Df	Sum of Sq	RSS	AIC
- TypeOfDay	3	4.4051e+07	3.9088e+10	27598
- Temp	1	1.1105e+07	3.9055e+10	27601
- Day	1	1.3294e+07	3.9057e+10	27601
<none>			3.9044e+10	27602
- Headgear	1	1.7928e+08	3.9223e+10	27608
- Shirts	1	5.4490e+08	3.9589e+10	27623
- Night	1	6.9885e+08	3.9743e+10	27629

```
- Firewks    1 9.5820e+08 4.0002e+10 27640
- BobbleHd   1 1.0506e+09 4.0095e+10 27643
- Month      6 1.8941e+09 4.0938e+10 27667
- Opponent  29 6.3496e+09 4.5394e+10 27788
- DayofWeek  6 7.4966e+09 4.6541e+10 27874
- Team      29 8.5221e+10 1.2427e+11 29413

Step:  AIC=27598.21
Attend ~ Team + Month + Day + DayofWeek + Opponent + Temp + Night +
    BobbleHd + Headgear + Shirts + Firewks

          Df  Sum of Sq       RSS   AIC
- Temp      1 3.2946e+06 3.9091e+10 27596
- Day       1 1.5556e+07 3.9104e+10 27597
<none>                  3.9088e+10 27598
- Headgear  1 1.8411e+08 3.9272e+10 27604
- Shirts    1 5.4744e+08 3.9635e+10 27619
- Night     1 7.0028e+08 3.9788e+10 27625
- Firewks   1 9.6636e+08 4.0054e+10 27636
- BobbleHd  1 1.0464e+09 4.0134e+10 27639
- Month     6 1.8910e+09 4.0979e+10 27663
- Opponent  29 6.3241e+09 4.5412e+10 27782
- DayofWeek  6 7.4958e+09 4.6584e+10 27869
- Team      29 9.9401e+10 1.3849e+11 29582

Step:  AIC=27596.35
Attend ~ Team + Month + Day + DayofWeek + Opponent + Night +
    BobbleHd + Headgear + Shirts + Firewks

          Df  Sum of Sq       RSS   AIC
- Day       1 1.4866e+07 3.9106e+10 27595
<none>                  3.9091e+10 27596
- Headgear  1 1.8591e+08 3.9277e+10 27602
- Shirts    1 5.4517e+08 3.9636e+10 27617
- Night     1 6.9707e+08 3.9788e+10 27623
- Firewks   1 9.6412e+08 4.0055e+10 27634
- BobbleHd  1 1.0489e+09 4.0140e+10 27637
- Month     6 2.1451e+09 4.1236e+10 27671
- Opponent  29 6.3389e+09 4.5430e+10 27781
- DayofWeek  6 7.4970e+09 4.6588e+10 27868
- Team      29 1.0033e+11 1.3942e+11 29591

Step:  AIC=27594.96
Attend ~ Team + Month + DayofWeek + Opponent + Night + BobbleHd +
    Headgear + Shirts + Firewks

          Df  Sum of Sq       RSS   AIC
<none>                  3.9106e+10 27595
```

```
- Headgear   1 1.8324e+08 3.9289e+10 27601
- Shirts     1 5.5516e+08 3.9661e+10 27616
- Night      1 6.9467e+08 3.9801e+10 27621
- Firewks    1 9.6516e+08 4.0071e+10 27632
- BobbleHd   1 1.0569e+09 4.0163e+10 27636
- Month      6 2.1364e+09 4.1243e+10 27669
- Opponent  29 6.3349e+09 4.5441e+10 27779
- DayofWeek  6 7.4855e+09 4.6592e+10 27866
- Team      29 1.0116e+11 1.4026e+11 29598
> confint(lower.lm.model)
               2.5 %   97.5 %
(Intercept) 30485.1 31284.29
> Anova(lower.lm.model)
Anova Table (Type III tests)

Response: Attend
              Sum Sq   Df F value    Pr(>F)
(Intercept) 2.3093e+12    1   22971 < 2.2e-16 ***
Residuals   2.4329e+11 2420
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Warning message:
In Anova.lm(lower.lm.model) :
  the model contains only an intercept: Type III test substituted
> vif(lower.lm.model)
Error in vif.lm(lower.lm.model) : model contains fewer than 2 terms
> r.rmse1 <- sqrt(mean(lower.lm.model$residuals^2))
> print (r.rmse1)
[1] 10024.48 – Training
> dodgers.test$predAttend <- predict(lower.lm.model, newdata = dodgers.test)
> dodgers.test$residuals <- dodgers.test$Attend - dodgers.test$predAttend
> test.r.rmse1 <- sqrt(mean(dodgers.test$residuals^2))
> print (test.r.rmse1)
[1] 9936.314 – Testing
> test.r.rmse2 <- sqrt(mean(dodgers.test$residuals^2))
> print (test.r.rmse2)
[1] 9936.314
> # exploratory data analysis with standard graphics: attendance by Promotion
> with(data=dodgers,plot(Promotion, Attend/1000,
+ xlab = "Promotion", ylab = "Attendance (thousands)",
+ col = "violet", las = 1))
>


Call:
lm(formula = Attend ~ Team + Month + DayofWeek + Opponent + Night +
    BobbleHd + Headgear + Shirts + Firewks, data = dodgers.train)
```

Residuals:

Min	1Q	Median	3Q	Max
-13724.1	-3218.9	-275.4	2766.0	26393.0

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	27082.26	1189.38	22.770	< 2e-16	***
TeamAtlanta Braves	2048.00	1032.94	1.983	0.047579	*
TeamBaltimore Orioles	-833.39	1066.12	-0.782	0.434505	
TeamBoston Red Sox	11963.43	1085.33	11.023	< 2e-16	***
TeamChicago Cubs	8865.42	1002.96	8.839	< 2e-16	***
TeamChicago White Sox	-2715.07	1108.68	-2.449	0.014439	*
TeamCincinnati Reds	2487.65	1017.42	2.445	0.014595	*
TeamCleveland Indians	-7014.42	1097.92	-6.389	2.21e-10	***
TeamColorado Rockies	5947.02	1005.78	5.913	4.13e-09	***
TeamDetroit Tigers	10278.31	1063.56	9.664	< 2e-16	***
TeamHouston Astros	-7681.34	1044.28	-7.356	3.08e-13	***
TeamKansas City Royals	-5708.66	1107.45	-5.155	2.87e-07	***
TeamLos Angeles Angels	11373.59	1067.27	10.657	< 2e-16	***
TeamLos Angeles Dodgers	13966.32	1036.06	13.480	< 2e-16	***
TeamMiami Marlins	1110.27	1052.29	1.055	0.291548	
TeamMilwaukee Brewers	8754.72	1046.17	8.368	< 2e-16	***
TeamMinnesota Twins	8334.12	1071.58	7.777	1.35e-14	***
TeamNew York Mets	1420.80	1006.87	1.411	0.158416	
TeamNew York Yankees	17825.74	1095.36	16.274	< 2e-16	***
TeamOakland Athletics	-7804.82	1094.27	-7.132	1.51e-12	***
TeamPhiladelphia Phillies	17991.31	1019.37	17.650	< 2e-16	***
TeamPittsburgh Pirates	-399.48	1051.92	-0.380	0.704174	
TeamSan Diego Padres	800.78	1020.31	0.785	0.432671	
TeamSan Francisco Giants	15851.81	1061.74	14.930	< 2e-16	***
TeamSeattle Mariners	-4871.90	1106.79	-4.402	1.15e-05	***
TeamSt. Louis Cardinals	14042.13	1014.39	13.843	< 2e-16	***
TeamTampa Bay Rays	-8939.38	1094.09	-8.171	6.34e-16	***
TeamTexas Rangers	16509.84	1054.83	15.652	< 2e-16	***
TeamToronto Blue Jays	-714.38	1078.67	-0.662	0.507894	
TeamWashington Nationals	4480.16	1039.30	4.311	1.73e-05	***
MonthAugust	580.57	453.97	1.279	0.201138	
MonthJuly	2616.92	461.59	5.669	1.71e-08	***
MonthJune	2920.17	473.42	6.168	8.81e-10	***
MonthMay	473.77	453.04	1.046	0.295831	
MonthOctober	2004.72	1097.76	1.826	0.068015	.
MonthSeptember	33.30	460.18	0.072	0.942314	
DayofWeekMonday	-4508.27	541.02	-8.333	< 2e-16	***
DayofWeekSaturday	1866.25	494.35	3.775	0.000166	***
DayofWeekSunday	-1453.47	573.62	-2.534	0.011380	*
DayofWeekThursday	-3686.22	566.57	-6.506	1.04e-10	***
DayofWeekTuesday	-4298.47	506.47	-8.487	< 2e-16	***
DayofWeekWednesday	-4203.99	503.00	-8.358	< 2e-16	***

```
OpponentAtlanta Braves         284.13    1000.25   0.284 0.776399
OpponentBaltimore Orioles      792.89    1048.85   0.756 0.449787
OpponentBoston Red Sox        4314.82    1038.10   4.156 3.41e-05 ***
OpponentChicago Cubs          1745.40    1049.76   1.663 0.096581 .
OpponentChicago White Sox     -514.38    1062.57  -0.484 0.628389
OpponentCincinnati Reds       -178.29    1011.97  -0.176 0.860171
OpponentCleveland Indians      179.28    1055.91   0.170 0.865201
OpponentColorado Rockies     -1167.73    1001.03  -1.167 0.243581
OpponentDetroit Tigers        3303.65    1018.47   3.244 0.001205 **
OpponentHouston Astros        -789.49     989.27  -0.798 0.424962
OpponentKansas City Royals    -1678.93    1053.87  -1.593 0.111341
OpponentLos Angeles Angels     2379.67    1046.47   2.274 0.023104 *
OpponentLos Angeles Dodgers    1932.30     988.86   1.954 0.050874 .
OpponentMiami Marlins          260.00      999.01   0.260 0.794699
OpponentMilwaukee Brewers      106.88     1046.89   0.102 0.918700
OpponentMinnesota Twins        -18.39     1042.59  -0.018 0.985927
OpponentNew York Mets          2382.58     982.03   2.426 0.015373 *
OpponentNew York Yankees       8463.10    1068.12   7.923 4.40e-15 ***
OpponentOakland Athletics      782.05     1059.91   0.738 0.460723
OpponentPhiladelphia Phillies  2254.64    1013.20   2.225 0.026208 *
OpponentPittsburgh Pirates     -69.06      979.63  -0.070 0.943806
OpponentSan Diego Padres        -6.52      991.73  -0.007 0.994755
OpponentSan Francisco Giants   2799.94     996.61   2.809 0.005025 **
OpponentSeattle Mariners      -1296.88    1035.23  -1.253 0.210492
OpponentSt. Louis Cardinals    2582.45    1043.97   2.474 0.013480 *
OpponentTampa Bay Rays        -1147.27    1022.11  -1.122 0.261845
OpponentTexas Rangers         1387.66    1081.23   1.283 0.199540
OpponentToronto Blue Jays      415.39     1066.54   0.389 0.696982
OpponentWashington Nationals   2226.39     977.15   2.278 0.022836 *
Night                        -1877.87     359.27  -5.227 1.96e-07 ***
BobbleHdYES                   4351.33     674.92   6.447 1.52e-10 ***
HeadgearYES                   1935.24     720.88   2.685 0.007341 **
ShirtsYES                     2788.05     596.67   4.673 3.23e-06 ***
Firewks                       3604.61     585.06   6.161 9.21e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 5042 on 1538 degrees of freedom
Multiple R-squared:  0.761,    Adjusted R-squared:  0.7493
F-statistic: 65.28 on 75 and 1538 DF,  p-value: < 2.2e-16
```

Output 8: Hierarchical Model Team

```
coef(my.lme.train.fit) # show the fitted coefficients
                  (Intercept)      Day        Temp      Night
Tampa Bay Rays       17590.66 11.212292  54.58529045 -4268.8821
Oakland Athletics    11812.10 10.662830 137.42306118 -2100.9755
Miami Marlins        25524.55  9.016229  47.93124808 -2540.6353
Boston Red Sox       35518.55 10.293406  36.08442250 -1081.8650
```

Chicago White Sox 14878.12 15.116736 137.07961588 -2104.1622
Minnesota Twins 31811.32 13.660009 47.46332895 -1894.2326
Pittsburgh Pirates 23130.48 12.310002 58.96498334 -3078.4072
Kansas City Royals 24782.55 6.107204 -2.08822219 -4280.7908
Chicago Cubs 35364.70 7.489199 11.82926766 -1682.3246
New York Mets 26170.02 11.996853 50.03192641 -2747.2917
Washington Nationals 31580.44 16.964801 17.51171445 -3614.4915
San Francisco Giants 40184.76 12.133259 27.25621609 -710.8447
Cincinnati Reds 22101.03 17.101113 105.58515730 -2118.9845
Cleveland Indians 10498.33 14.900094 151.35820376 -2429.3111
San Diego Padres 21455.69 7.945778 91.02443718 -1525.3960
Houston Astros 15188.52 10.431501 85.93116296 -3412.0379
Los Angeles Angels 30095.84 13.498817 97.13088522 -248.2611
Detroit Tigers 29574.91 19.263707 105.13255653 -864.9968
Philadelphia Phillies 44196.30 11.891851 0.08792514 -913.4057
Seattle Mariners 21697.54 11.948212 45.83397782 -3854.9336
Milwaukee Brewers 36765.90 10.361820 -3.45899343 -2408.7852
Baltimore Orioles 29931.63 10.721644 -8.81865256 -4121.4229
St. Louis Cardinals 38964.63 11.600136 16.98392246 -1303.4476
Toronto Blue Jays 31492.05 21.297671 -25.40760516 -5970.4509
Arizona Diamondbacks 28233.14 5.617364 12.15325675 -2910.6759
Texas Rangers 46188.82 10.569615 -31.24824193 -1555.0853
Colorado Rockies 28671.87 13.034314 61.82877611 -1894.6696
New York Yankees 38739.43 22.933280 68.48093032 -916.5830
Atlanta Braves 29666.24 11.127984 16.53685475 -3221.9144
Los Angeles Dodgers 33562.83 16.300640 93.40218269 -65.1166
> group.Team.test$lme_pred_price <- predict(my.lme.train.fit, newdata = group.Team.test)
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.6222933

dodgers.test$predAttend <- predict(my.lme.train.fit, newdata = dodgers.test)
> dodgers.test$residuals <- dodgers.test$Attend - dodgers.test$predAttend
> test.r.rmse2 <- sqrt(mean(dodgers.test$residuals^2)) # Root Mean Square Error Calculation
> print (test.r.rmse2) # provides test performance measure to compare with other models
[1] 6113.979

Output 9: Month

	(Intercept)	Day	Temp	Night
October	24966.77	94.556022	80.49461	-2514.642
May	24875.07	127.802722	67.95458	-2895.321
September	24187.26	174.473298	65.09418	-2556.577
June	24500.06	71.788076	103.18547	-1414.897
July	24391.12	100.762772	92.92772	-1709.490
April	27807.01	-117.040264	100.64700	-3629.094
August	26223.07	-2.692203	90.99555	-2954.939

> group.Team.test$lme_pred_price <- predict(my.lme.train.fit, newdata = group.Team.test)
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.04753738

Output 10: Day of Week

```
> coef(my.lme.train.fit) # show the fitted coefficients
           (Intercept)      Day     Temp     Night
Monday       24125.87  45.47690  86.53879 -3818.779
Friday       28856.16  46.99285 108.00780 -4358.878
Wednesday    21806.24  60.92288  87.72847 -1849.535
Saturday     25883.12  85.89498 121.64226 -1868.075
Thursday     24711.00  41.99865  87.15113 -3545.719
Sunday       18118.93 176.13477 150.82988  5581.388
Tuesday      24650.73  43.19289  87.35791 -3884.819
> group.Team.test$lme_pred_price <- predict(my.lme.train.fit, newdata = group.Team.test)
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.102855
```

Output 11: Opponent

```
Error in lme.formula(fixed = Attend ~ Day + Temp + Night, data = group.Team.train) :
  nlminb problem, convergence error code = 1
  message = iteration limit reached without convergence (10)
```

Output 12: TypeOfDay

```
coef(my.lme.train.fit) # show the fitted coefficients
           (Intercept)      Day     Temp     Night
Rainy        25025.30  71.18169 82.13478 -2515.393
Dome         24593.03  16.17985 25.42865 -4298.499
Cloudy       25177.84  68.57369 99.03735 -1878.714
Clear Skies  25012.69 107.45660 85.82570 -2580.307
> group.Team.test$lme_pred_price <- predict(my.lme.train.fit, newdata = group.Team.test)
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.09345651
```

Output 13: Promotion

```
coef(my.lme.train.fit) # show the fitted coefficients
    (Intercept)      Day     Temp     Night
NO     23292.47 77.58362 108.74319 -2766.775
YES    27797.22 22.10184  69.44208 -1103.728
> group.Team.test$lme_pred_price <- predict(my.lme.train.fit, newdata = group.Team.test)
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.04190781
```

Output 14: Team and Promotion with Stepwise Variables.

```
Standardized Within-Group Residuals:
       Min         Q1        Med         Q3        Max
-2.74314731 -0.63676480 -0.06452972  0.52991875  5.34149628

Number of Observations: 1614
Number of Groups: 30
Warning message:
```

```
In pt(-abs(tTable[, "t-value"]), tTable[, "DF"]) : NaNs produced
> group.Team.test$lme_pred_price <- predict(best, newdata = group.Team.test)
Error in sprintf(ngettext(sum(wch), "level %s not allowed for %s", "levels %s not allowed for %s"),  :
  too few arguments
> with(group.Team.test,cor(Attend,lme_pred_price)^2) # R-squared in test set
[1] 0.7309106
> dodgers.test$predAttend <- predict(my.lme.train.fit, newdata = dodgers.test)
> dodgers.test$predAttend <- predict(best, newdata = dodgers.test)
Error in sprintf(ngettext(sum(wch), "level %s not allowed for %s", "levels %s not allowed for %s"),  :
  too few arguments
> dodgers.test$residuals <- dodgers.test$Attend - dodgers.test$predAttend
> test.r.rmse2 <- sqrt(mean(dodgers.test$residuals^2)) # Root Mean Square Error Calculation
> print (test.r.rmse2) # provides test performance measure to compare with other models
[1] 6113.979
```