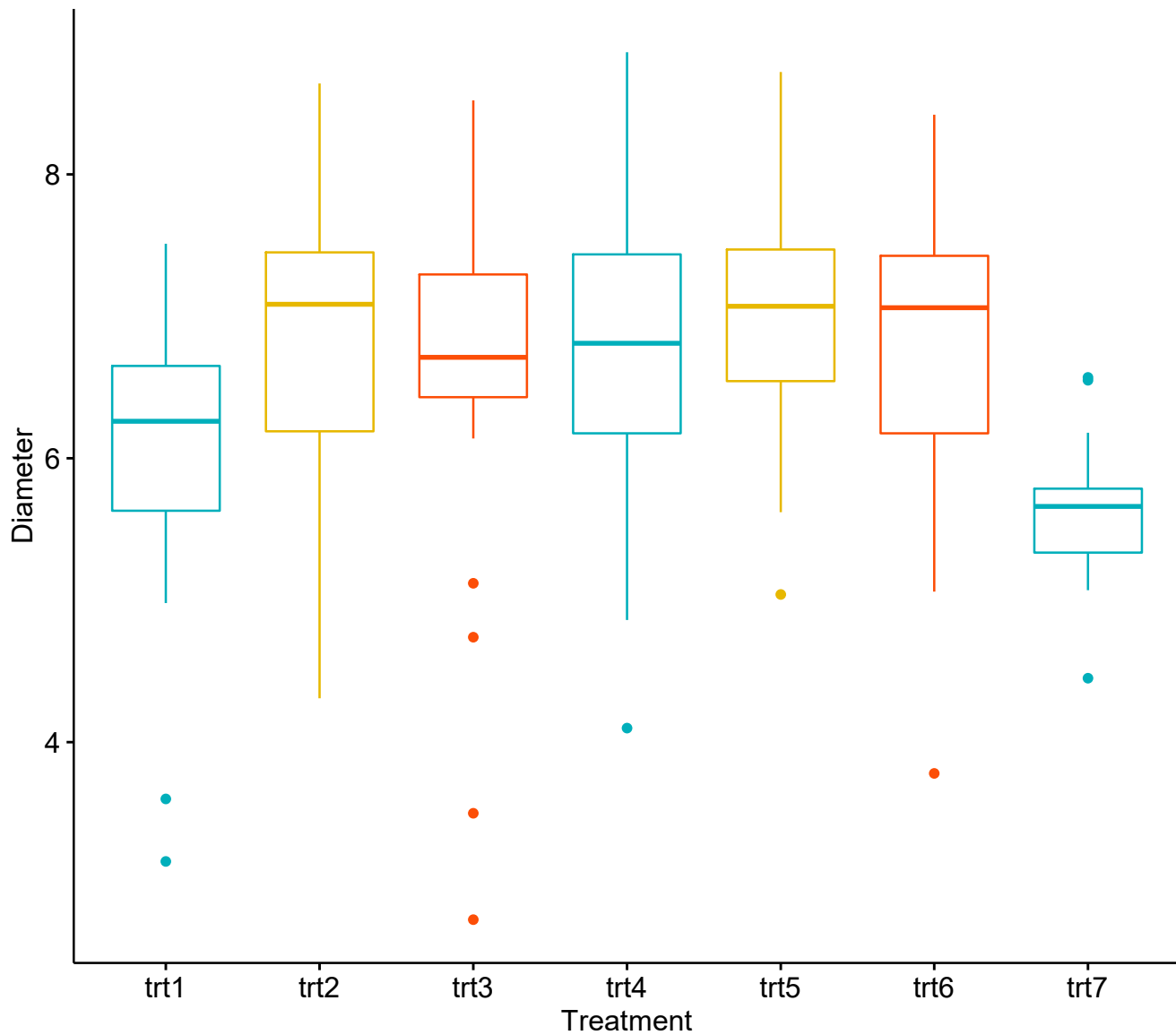


group trt1 trt3 trt5 trt7
trt2 trt4 trt6



Untitled

```
> # Compute the analysis of variance
> res.aov <- aov(diameter ~ group, data = my_data)
> # Summary of the analysis
> summary(res.aov)
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
group	6	46.61	7.769	8.317	4.37e-08 ***
Residuals	208	194.28	0.934		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

16 observations deleted due to missingness

```
> TukeyHSD(res.aov)
  Tukey multiple comparisons of means
  95% family-wise confidence level
```

Fit: aov(formula = diameter ~ group, data = my_data)

```
$`group`
```

	diff	lwr	upr	p adj
trt2-trt1	0.854988506	0.10562535	1.6043517	0.0141249
trt3-trt1	0.641268076	-0.10213052	1.3846667	0.1412378
trt4-trt1	0.695139043	-0.04825955	1.4385376	0.0837523
trt5-trt1	0.931842672	0.19407964	1.6696057	0.0040819
trt6-trt1	0.703203560	-0.04019504	1.4466022	0.0770712
trt7-trt1	-0.425506118	-1.16890472	0.3178925	0.6140182
trt3-trt2	-0.213720430	-0.95068974	0.5232489	0.9774680
trt4-trt2	-0.159849462	-0.89681877	0.5771198	0.9951445
trt5-trt2	0.076854167	-0.65443003	0.8081384	0.9999227
trt6-trt2	-0.151784946	-0.88875425	0.5851844	0.9963460
trt7-trt2	-1.280494624	-2.01746393	-0.5435253	0.0000111
trt4-trt3	0.053870968	-0.67703265	0.7847746	0.9999905
trt5-trt3	0.290574597	-0.43459635	1.0157455	0.8961821
trt6-trt3	0.061935484	-0.66896813	0.7928391	0.9999783
trt7-trt3	-1.066774194	-1.79767781	-0.3358706	0.0004296
trt5-trt4	0.236703629	-0.48846732	0.9618746	0.9595001
trt6-trt4	0.008064516	-0.72283910	0.7389681	1.0000000
trt7-trt4	-1.120645161	-1.85154878	-0.3897415	0.0001715
trt6-trt5	-0.228639113	-0.95381006	0.4965318	0.9657970
trt7-trt5	-1.357348790	-2.08251974	-0.6321778	0.0000016
trt7-trt6	-1.128709677	-1.85961329	-0.3978061	0.0001489

Untitled

```
> # Compute the analysis of variance
> res.aov <- aov(diameter ~ tray,data = my_data)
> # Summary of the analysis
> summary(res.aov)
      Df Sum Sq Mean Sq F value    Pr(>F)
tray    20  89.74   4.487    5.759 1.24e-11 ***
Residuals 194 151.15   0.779
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
16 observations deleted due to missingness
> TukeyHSD(res.aov)
  Tukey multiple comparisons of means
    95% family-wise confidence level
```

Fit: aov(formula = diameter ~ tray, data = my_data)

```
$`tray`
      diff      lwr      upr      p adj
b-a -0.27211111 -1.74020112  1.195978900 1.0000000
c-a -0.50511111 -1.97320112  0.962978900 0.9996662
d-a -0.15444444 -1.66067301  1.351784126 1.0000000
e-a  0.15588889 -1.31220112  1.623978900 1.0000000
f-a -0.18888889 -1.69511746  1.317339681 1.0000000
g-a -1.04011111 -2.50820112  0.427978900 0.5599468
h-a -0.57311111 -2.04120112  0.894978900 0.9980668
i-a -0.45495726 -1.84048603  0.930571503 0.9998325
j-a -0.43555556 -1.94178413  1.070673015 0.9999766
k-a -0.59888889 -2.10511746  0.907339681 0.9975402
l-a  0.35722222 -1.32679251  2.041236959 0.9999999
m-a -0.82222222 -2.32845079  0.684006348 0.9207448
n-a -0.10911111 -1.57720112  1.358978900 1.0000000
o-a -1.48611111 -2.79054332 -0.181678905 0.0089952
p-a -1.95222222 -3.45845079 -0.445993652 0.0009454
r-a -1.14236111 -2.69494598  0.410223762 0.4844338
s-a -0.17011111 -1.63820112  1.297978900 1.0000000
t-a -0.31944444 -2.00345918  1.364570292 1.0000000
u-a -1.67000000 -2.97443221 -0.365567794 0.0012034
v-a -1.58957265 -2.97510142 -0.204043882 0.0080815
c-b -0.23300000 -1.66193389  1.195933888 1.0000000
d-b  0.11766667 -1.35042334  1.585756678 1.0000000
e-b  0.42800000 -1.00093389  1.856933888 0.9999592
f-b  0.08322222 -1.38486779  1.551312233 1.0000000
g-b -0.76800000 -2.19693389  0.660933888 0.9308646
h-b -0.30100000 -1.72993389  1.127933888 0.9999999
i-b -0.18284615 -1.52681555  1.161123244 1.0000000
j-b -0.16344444 -1.63153446  1.304645567 1.0000000
k-b -0.32677778 -1.79486779  1.141312233 0.9999997
l-b  0.62933333 -1.02065740  2.279324063 0.9985826
```

Untitled

m-b	-0.55011111	-2.01820112	0.917978900	0.9988861
n-b	0.16300000	-1.26593389	1.591933888	1.0000000
o-b	-1.21400000	-2.47420124	0.046201236	0.0745201
p-b	-1.68011111	-3.14820112	-0.212021100	0.0083969
r-b	-0.87025000	-2.38586326	0.645363263	0.8796020
s-b	0.10200000	-1.32693389	1.530933888	1.0000000
t-b	-0.04733333	-1.69732406	1.602657396	1.0000000
u-b	-1.39788889	-2.65809012	-0.137687653	0.0133451
v-b	-1.31746154	-2.66143094	0.026507859	0.0621564
d-c	0.35066667	-1.11742334	1.818756678	0.9999990
e-c	0.66100000	-0.76793389	2.089933888	0.9846560
f-c	0.31622222	-1.15186779	1.784312233	0.9999998
g-c	-0.53500000	-1.96393389	0.893933888	0.9988985
h-c	-0.06800000	-1.49693389	1.360933888	1.0000000
i-c	0.05015385	-1.29381555	1.394123244	1.0000000
j-c	0.06955556	-1.39853446	1.537645567	1.0000000
k-c	-0.09377778	-1.56186779	1.374312233	1.0000000
l-c	0.86233333	-0.78765740	2.512324063	0.9464497
m-c	-0.31711111	-1.78520112	1.150978900	0.9999998
n-c	0.39600000	-1.03293389	1.824933888	0.9999882
o-c	-0.98100000	-2.24120124	0.279201236	0.3724673
p-c	-1.44711111	-2.91520112	0.020978900	0.0585790
r-c	-0.63725000	-2.15286326	0.878363263	0.9950004
s-c	0.33500000	-1.09393389	1.763933888	0.9999993
t-c	0.18566667	-1.46432406	1.835657396	1.0000000
u-c	-1.16488889	-2.42509012	0.095312347	0.1108775
v-c	-1.08446154	-2.42843094	0.259507859	0.3051231
e-d	0.31033333	-1.15775668	1.778423344	0.9999999
f-d	-0.03444444	-1.54067301	1.471784126	1.0000000
g-d	-0.88566667	-2.35375668	0.582423344	0.8258415
h-d	-0.41866667	-1.88675668	1.049423344	0.9999813
i-d	-0.30051282	-1.68604159	1.085015947	0.9999998
j-d	-0.28111111	-1.78733968	1.225117459	1.0000000
k-d	-0.44444444	-1.95067301	1.061784126	0.9999678
l-d	0.51166667	-1.17234807	2.195681403	0.9999489
m-d	-0.66777778	-2.17400635	0.838450792	0.9905448
n-d	0.04533333	-1.42275668	1.513423344	1.0000000
o-d	-1.33166667	-2.63609887	-0.027234461	0.0394247
p-d	-1.79777778	-3.30400635	-0.291549208	0.0042716
r-d	-0.98791667	-2.54050154	0.564668206	0.7519351
s-d	-0.01566667	-1.48375668	1.452423344	1.0000000
t-d	-0.16500000	-1.84901474	1.519014736	1.0000000
u-d	-1.51555556	-2.81998776	-0.211123350	0.0066314
v-d	-1.43512821	-2.82065697	-0.049599437	0.0331201
f-e	-0.34477778	-1.81286779	1.123312233	0.9999993
g-e	-1.19600000	-2.62493389	0.232933888	0.2421947
h-e	-0.72900000	-2.15793389	0.699933888	0.9574430
i-e	-0.61084615	-1.95481555	0.733123244	0.9874090

Untitled

j-e	-0.59144444	-2.05953446	0.876645567	0.9970840
k-e	-0.75477778	-2.22286779	0.713312233	0.9541542
l-e	0.20133333	-1.44865740	1.851324063	1.0000000
m-e	-0.97811111	-2.44620112	0.489978900	0.6756820
n-e	-0.26500000	-1.69393389	1.163933888	1.0000000
o-e	-1.64200000	-2.90220124	-0.381798764	0.0008509
p-e	-2.10811111	-3.57620112	-0.640021100	0.0001000
r-e	-1.29825000	-2.81386326	0.217363263	0.2061189
s-e	-0.32600000	-1.75493389	1.102933888	0.9999996
t-e	-0.47533333	-2.12532406	1.174657396	0.9999780
u-e	-1.82588889	-3.08609012	-0.565687653	0.0000805
v-e	-1.74546154	-3.08943094	-0.401492141	0.0009080
g-f	-0.85122222	-2.31931223	0.616867789	0.8701006
h-f	-0.38422222	-1.85231223	1.083867789	0.9999954
i-f	-0.26606838	-1.65159714	1.119460392	1.0000000
j-f	-0.24666667	-1.75289524	1.259561904	1.0000000
k-f	-0.41000000	-1.91622857	1.096228570	0.9999912
l-f	0.54611111	-1.13790363	2.230125847	0.9998611
m-f	-0.63333333	-2.13956190	0.872895237	0.9949975
n-f	0.07977778	-1.38831223	1.547867789	1.0000000
o-f	-1.29722222	-2.60165443	0.007209984	0.0531806
p-f	-1.76333333	-3.26956190	-0.257104763	0.0058737
r-f	-0.95347222	-2.50605710	0.599112651	0.8029779
s-f	0.01877778	-1.44931223	1.486867789	1.0000000
t-f	-0.13055556	-1.81457029	1.553459181	1.0000000
u-f	-1.48111111	-2.78554332	-0.176678905	0.0094665
v-f	-1.40068376	-2.78621253	-0.015154993	0.0441877
h-g	0.46700000	-0.96193389	1.895933888	0.9998439
i-g	0.58515385	-0.75881555	1.929123244	0.9923629
j-g	0.60455556	-0.86353446	2.072645567	0.9961442
k-g	0.44122222	-1.02686779	1.909312233	0.9999569
l-g	1.39733333	-0.25265740	3.047324063	0.2235025
m-g	0.21788889	-1.25020112	1.685978900	1.0000000
n-g	0.93100000	-0.49793389	2.359933888	0.7140408
o-g	-0.44600000	-1.70620124	0.814201236	0.9994987
p-g	-0.91211111	-2.38020112	0.555978900	0.7870739
r-g	-0.10225000	-1.61786326	1.413363263	1.0000000
s-g	0.87000000	-0.55893389	2.298933888	0.8142819
t-g	0.72066667	-0.92932406	2.370657396	0.9920704
u-g	-0.62988889	-1.89009012	0.630312347	0.9652202
v-g	-0.54946154	-1.89343094	0.794507859	0.9964809
i-h	0.11815385	-1.22581555	1.462123244	1.0000000
j-h	0.13755556	-1.33053446	1.605645567	1.0000000
k-h	-0.02577778	-1.49386779	1.442312233	1.0000000
l-h	0.93033333	-0.71965740	2.580324063	0.8959303
m-h	-0.24911111	-1.71720112	1.218978900	1.0000000
n-h	0.46400000	-0.96493389	1.892933888	0.9998583
o-h	-0.91300000	-2.17320124	0.347201236	0.5154947

Untitled

p-h	-1.37911111	-2.84720112	0.088978900	0.0954515
r-h	-0.56925000	-2.08486326	0.946363263	0.9988499
s-h	0.40300000	-1.02593389	1.831933888	0.9999844
t-h	0.25366667	-1.39632406	1.903657396	1.0000000
u-h	-1.09688889	-2.35709012	0.163312347	0.1830388
v-h	-1.01646154	-2.36043094	0.327507859	0.4292288
j-i	0.01940171	-1.36612706	1.404930477	1.0000000
k-i	-0.14393162	-1.52946039	1.241597144	1.0000000
l-i	0.81217949	-0.76480215	2.389161127	0.9533805
m-i	-0.36726496	-1.75279373	1.018263811	0.9999943
n-i	0.34584615	-0.99812324	1.689815551	0.9999965
o-i	-1.03115385	-2.19412798	0.131820289	0.1583820
p-i	-1.49726496	-2.88279373	-0.111736189	0.0192015
r-i	-0.68740385	-2.12319117	0.748383481	0.9777009
s-i	0.28484615	-1.05912324	1.628815551	0.9999999
t-i	0.13551282	-1.44146882	1.712494461	1.0000000
u-i	-1.21504274	-2.37801687	-0.052068599	0.0297727
v-i	-1.13461538	-2.38787331	0.118642541	0.1332115
k-j	-0.16333333	-1.66956190	1.342895237	1.0000000
l-j	0.79277778	-0.89123696	2.476792514	0.9813946
m-j	-0.38666667	-1.89289524	1.119561904	0.9999967
n-j	0.32644444	-1.14164557	1.794534456	0.9999997
o-j	-1.05055556	-2.35498776	0.253876650	0.3085722
p-j	-1.51666667	-3.02289524	-0.010438096	0.0462455
r-j	-0.70680556	-2.25939043	0.845779317	0.9871760
s-j	0.26544444	-1.20264557	1.733534456	1.0000000
t-j	0.11611111	-1.56790363	1.800125847	1.0000000
u-j	-1.23444444	-2.53887665	0.069987761	0.0889274
v-j	-1.15401709	-2.53954586	0.231511674	0.2502012
l-k	0.95611111	-0.72790363	2.640125847	0.8899277
m-k	-0.22333333	-1.72956190	1.282895237	1.0000000
n-k	0.48977778	-0.97831223	1.957867789	0.9997878
o-k	-0.88722222	-2.19165443	0.417209984	0.6382129
p-k	-1.35333333	-2.85956190	0.152895237	0.1420447
r-k	-0.54347222	-2.09605710	1.009112651	0.9995717
s-k	0.42877778	-1.03931223	1.896867789	0.9999726
t-k	0.27944444	-1.40457029	1.963459181	1.0000000
u-k	-1.07111111	-2.37554332	0.233321095	0.2742505
v-k	-0.99068376	-2.37621253	0.394845007	0.5417466
m-l	-1.17944444	-2.86345918	0.504570292	0.5824803
n-l	-0.46633333	-2.11632406	1.183657396	0.9999838
o-l	-1.84333333	-3.34956190	-0.337104763	0.0027744
p-l	-2.30944444	-3.99345918	-0.625429708	0.0002894
r-l	-1.49958333	-3.22518494	0.226018276	0.1852669
s-l	-0.52733333	-2.17732406	1.122657396	0.9998886
t-l	-0.67666667	-2.52141238	1.168079050	0.9991700
u-l	-2.02722222	-3.53345079	-0.520993652	0.0004351
v-l	-1.94679487	-3.52377651	-0.369813232	0.0023751

Untitled

n-m	0.71311111	-0.75497890	2.181201122	0.9740325
o-m	-0.66388889	-1.96832109	0.640543317	0.9584238
p-m	-1.13000000	-2.63622857	0.376228570	0.4454012
r-m	-0.32013889	-1.87272376	1.232445984	0.9999999
s-m	0.65211111	-0.81597890	2.120201122	0.9903321
t-m	0.50277778	-1.18123696	2.186792514	0.9999612
u-m	-0.84777778	-2.15220998	0.456654428	0.7181510
v-m	-0.76735043	-2.15287920	0.618178340	0.9103075
o-n	-1.37700000	-2.63720124	-0.116798764	0.0165007
p-n	-1.84311111	-3.31120112	-0.375021100	0.0017452
r-n	-1.03325000	-2.54886326	0.482363263	0.6339080
s-n	-0.06100000	-1.48993389	1.367933888	1.0000000
t-n	-0.21033333	-1.86032406	1.439657396	1.0000000
u-n	-1.56088889	-2.82109012	-0.300687653	0.0022371
v-n	-1.48046154	-2.82443094	-0.136492141	0.0147352
p-o	-0.46611111	-1.77054332	0.838321095	0.9994253
r-o	0.34375000	-1.01394609	1.701446086	0.9999974
s-o	1.31600000	0.05579876	2.576201236	0.0299489
t-o	1.16666667	-0.33956190	2.672895237	0.3821821
u-o	-0.18388889	-1.24895332	0.881175547	1.0000000
v-o	-0.10346154	-1.26643567	1.059512597	1.0000000
r-p	0.80986111	-0.74272376	2.362445984	0.9474083
s-p	1.78211111	0.31402110	3.250201122	0.0031998
t-p	1.63277778	-0.05123696	3.316792514	0.0697470
u-p	0.28222222	-1.02220998	1.586654428	0.9999998
v-p	0.36264957	-1.02287920	1.748178340	0.9999954
s-r	0.97225000	-0.54336326	2.487863263	0.7392684
t-r	0.82291667	-0.90268494	2.548518276	0.9786156
u-r	-0.52763889	-1.88533497	0.830057197	0.9981786
v-r	-0.44721154	-1.88299887	0.988575788	0.9999249
t-s	-0.14933333	-1.79932406	1.500657396	1.0000000
u-s	-1.49988889	-2.76009012	-0.239687653	0.0044785
v-s	-1.41946154	-2.76343094	-0.075492141	0.0259558
u-t	-1.35055556	-2.85678413	0.155673015	0.1445012
v-t	-1.27012821	-2.84710985	0.306853435	0.3084744
v-u	0.08042735	-1.08254679	1.243401486	1.0000000