```
Summary Table Info:
 1st Summary Table Name: 0108_Stapleton.taxa.genus.no_mcl.summary_table.tsv
    Samples: 205 Categories: 551
 2nd Summary Table Name:
    Samples:  Categories:

  Total Number Samples Loaded: 205
  Total Number Categories Loaded: 551

Sample Pairing Info:
  Mapping Name: np_sinus.crs_obst.first_visit.NasalCavity.map.tsv
  Number of Possible Pairings Loaded: 87

Number of Complete/Matched Pairings: 80
Number of InComplete/UnMatched Pairings: 7
```

```
Incomplete Pairings:
     SINUS                          NP
[1,] NA                             "0108.ALS24CRS.20170227.NP"
[2,] NA                             NA
[3,] NA                             "0108.ALS29OBST.20170127.NP"
[4,] "0108.ALS31CRS.20170418.SINUS" NA
[5,] NA                             "0108.ALS33CRS.20170418.NP"
[6,] NA                             NA
[7,] NA                             "0108.ALS36OBST.20170216.NP"

  Num complete pairings: 80
Num incomplete pairings: 7

(Double NA entries mean that the samples are missing from both groups.)
(Known incomplete pairings (i.e. NAs in map file) are not included.)

Missing:
                          SINUS                           SINUS                           SINUS
 "0108.ALS24CRS.20170227.SINUS"  "0108.ALS26CRS.20170309.SINUS" "0108.ALS29OBST.20170127.SINUS"
                          SINUS                           SINUS                           SINUS
 "0108.ALS33CRS.20170418.SINUS"  "0108.ALS35CRS.20170501.SINUS" "0108.ALS36OBST.20170216.SINUS"
                             NP                              NP                              NP
    "0108.ALS26CRS.20170309.NP"     "0108.ALS31CRS.20170418.NP"     "0108.ALS35CRS.20170501.NP"
```

```
Variables Targeted:

Predictors:
 [1] "FirstGroup"       "Visit"            "DaysSinceAdenoid" "Female"           "AgeYrs"
 [6] "CRS"              "PPI"              "Beta2"            "Antibiotic"       "InhaledSteroid"
[11] "NasalSteroid"     "SystemicImmuno"   "Antihistimine"    "LTRA"

Required Variables:
NULL
```

Factor File Name: Metadata.joined.tsv

Num Loaded Factors/Variables: 42
Num Samples in Factor File: 216

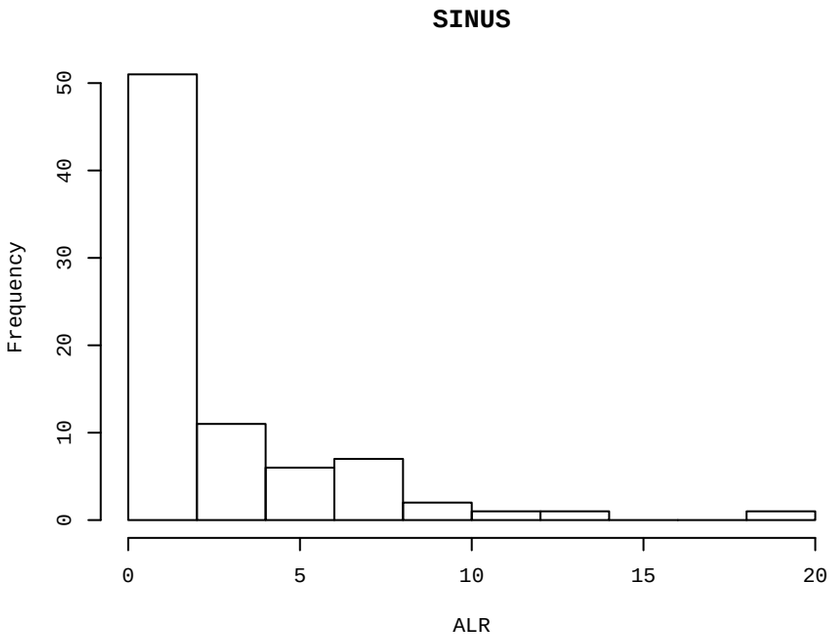
Num Samples Shared between Factors and Pairable Samples: 160

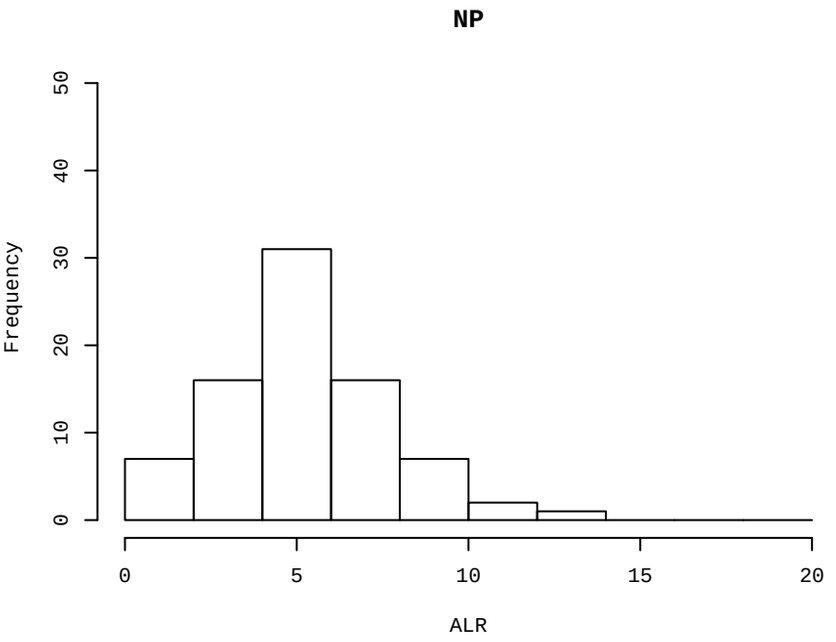
Num Samples Missing Factor Information: 7

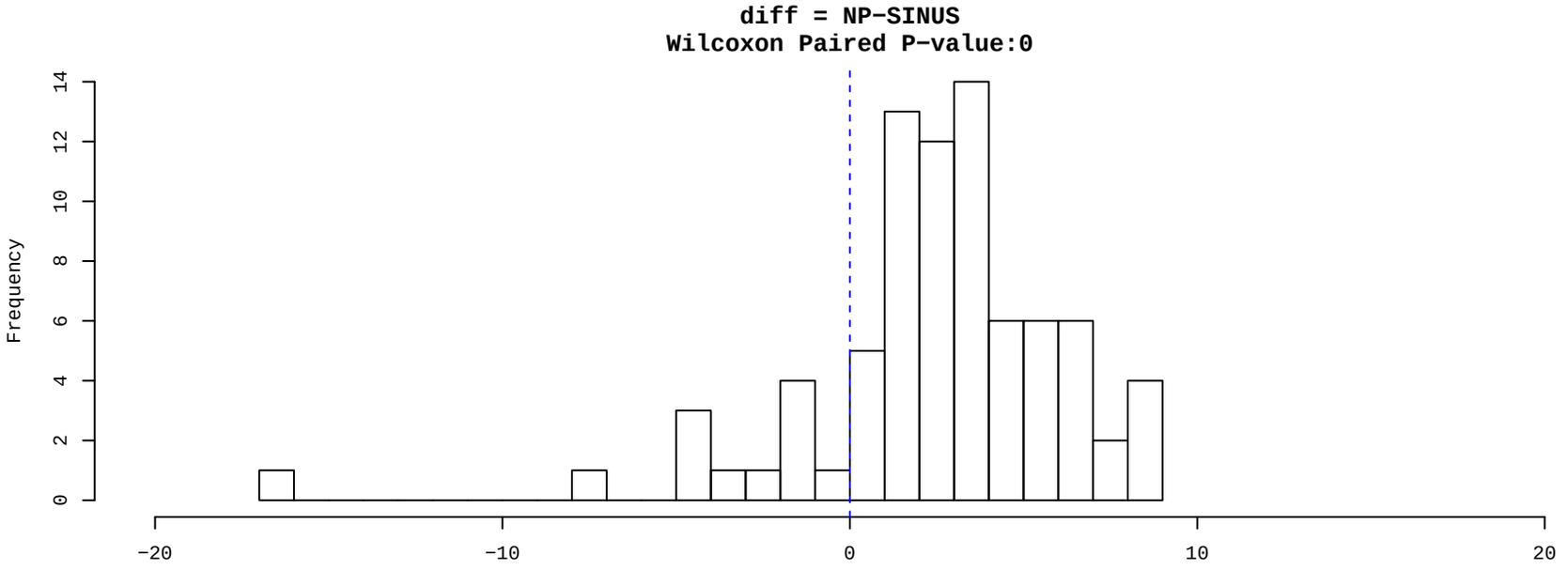
Samples missing info:
[1] "0000.0439.20171017" "0002.0057.20161012.1" "0002.0060.20161012.2"
[4] "0002.0440.20171101" "0002.0447.20171106" "0108.ALS23CRS.20170530.SINUS"
[7] "0108.ALS32.20170613.SINUS"

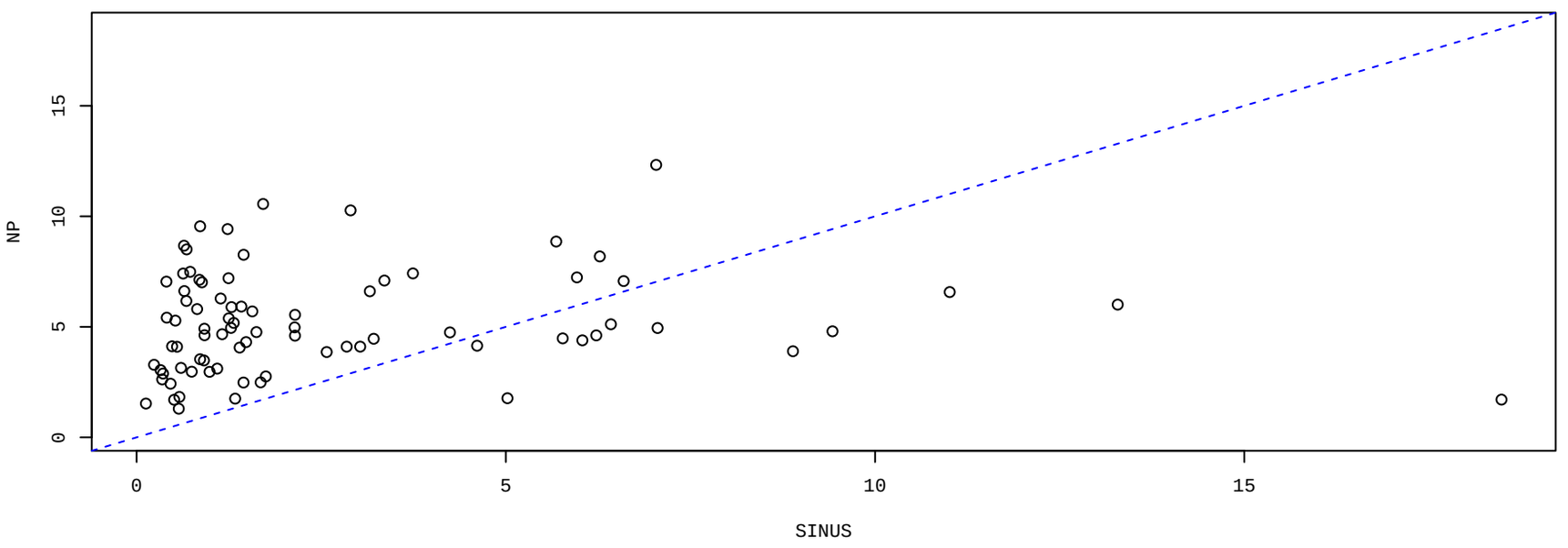
```
Num (Reconciled) Samples before NA removal: 160
Num Factors before NA removal: 14

Acceptable Variables after NA Removal:

 [1] "FirstGroup"     "Female"         "AgeYrs"         "CRS"            "PPI"
 [6] "Beta2"          "Antibiotic"     "InhaledSteroid" "NasalSteroid"   "SystemicImmuno"
[11] "Antihistimine"  "LTRA"

Num Samples w/o NAs: 160
Num Factors w/o NAs: 12
```

1.) Tail


SINUS
Frequency
0
10
20
30
40
50
0
5
10
15
20
ALR


NP
Frequency
0
10
20
30
40
50
0
5
10
15
20
ALR


diff = NP−SINUS
Wilcoxon Paired P−value:0
Frequency
0
2
4
6
8
10
12
14
−20
−10
0
10
20


NP
0
5
10
15
0
5
10
15
SINUS

1.) Tail:

```
Call:
lm(formula = as.formula(model_str), data = model_pred)

Residuals:
     Min       1Q   Median       3Q      Max
−16.7531  −1.4195   0.0966   2.3561   6.0877

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)     2.09277    1.25671   1.665   0.1005
FirstGroup      0.05417    0.94937   0.057   0.9547
Female          2.19481    0.97832   2.243   0.0282 *
AgeYrs         −0.10303    0.13261  −0.777   0.4400
CRS            −0.62857    0.98340  −0.639   0.5249
PPI             1.73701    2.86631   0.606   0.5466
Beta2           2.46099    1.71543   1.435   0.1560
Antibiotic     −0.98290    1.41095  −0.697   0.4885
InhaledSteroid  1.62388    2.08470   0.779   0.4388
NasalSteroid    1.96441    1.30644   1.504   0.1374
SystemicImmuno −0.60229    3.48292  −0.173   0.8632
Antihistimine  −1.85875    1.23393  −1.506   0.1367
LTRA           −2.81310    2.32931  −1.208   0.2314
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.814 on 67 degrees of freedom
Multiple R−squared:  0.1696,Adjusted R−squared:  0.0209
F−statistic: 1.141 on 12 and 67 DF,  p−value: 0.3439
```

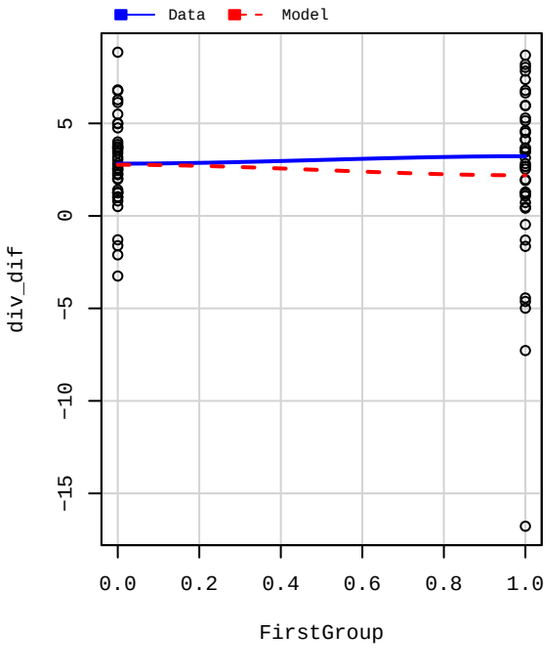
1.) Tail:

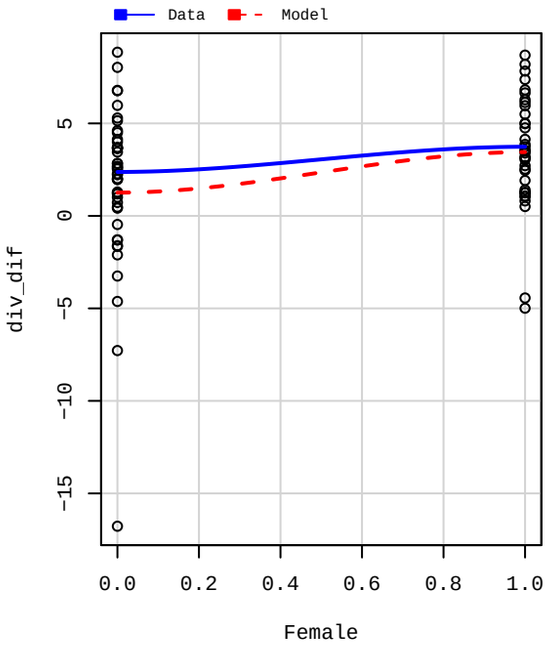
Analysis of Variance Table

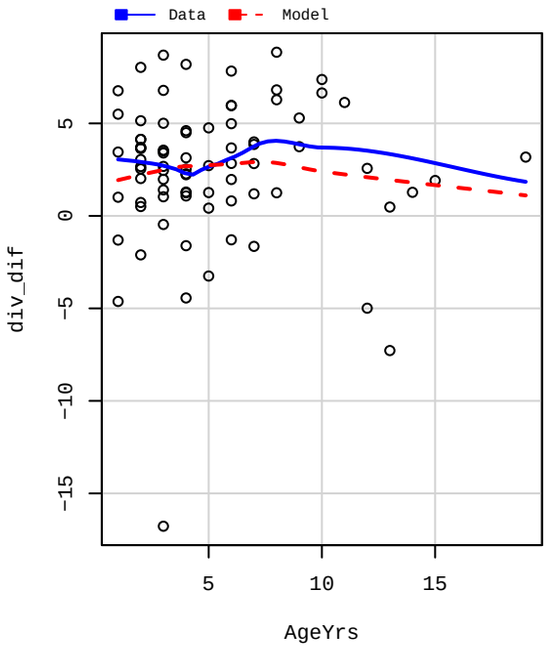
Response: div_dif

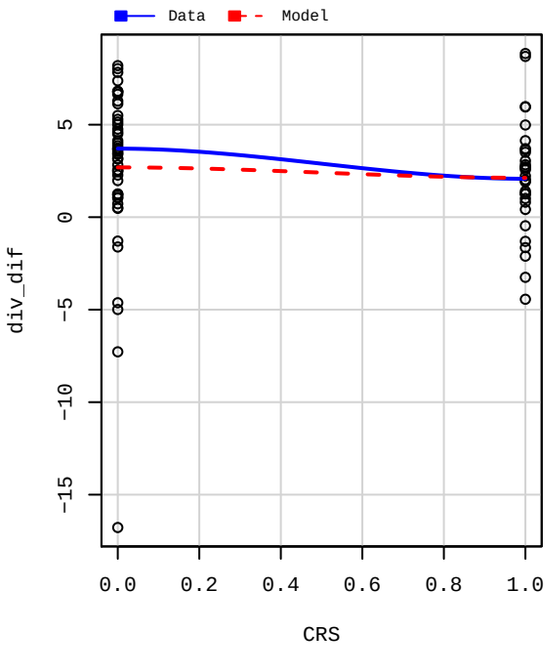
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
FirstGroup	1	7.17	7.167	0.4927	0.48518	
Female	1	55.00	55.003	3.7810	0.05604	.
AgeYrs	1	3.39	3.392	0.2332	0.63076	
CRS	1	4.82	4.821	0.3314	0.56676	
PPI	1	25.02	25.016	1.7197	0.19421	
Beta2	1	27.09	27.087	1.8620	0.17696	
Antibiotic	1	5.44	5.439	0.3739	0.54297	
InhaledSteroid	1	2.11	2.113	0.1453	0.70431	
NasalSteroid	1	6.40	6.395	0.4396	0.50959	
SystemicImmuno	1	1.68	1.681	0.1156	0.73495	
Antihistimine	1	39.76	39.764	2.7334	0.10295	
LTRA	1	21.22	21.218	1.4585	0.23141	
Residuals	67	974.67	14.547			

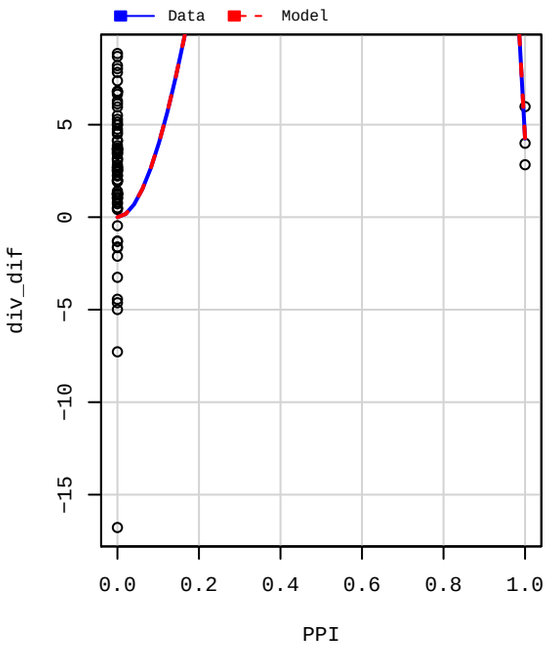
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

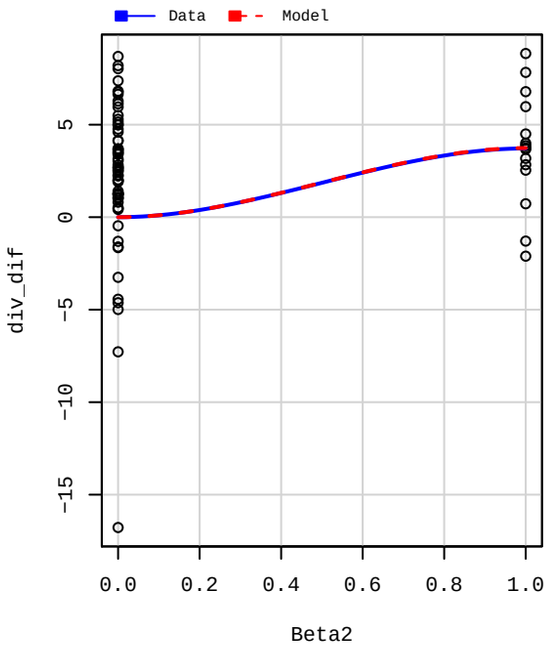

Data
Model
div_dif
FirstGroup

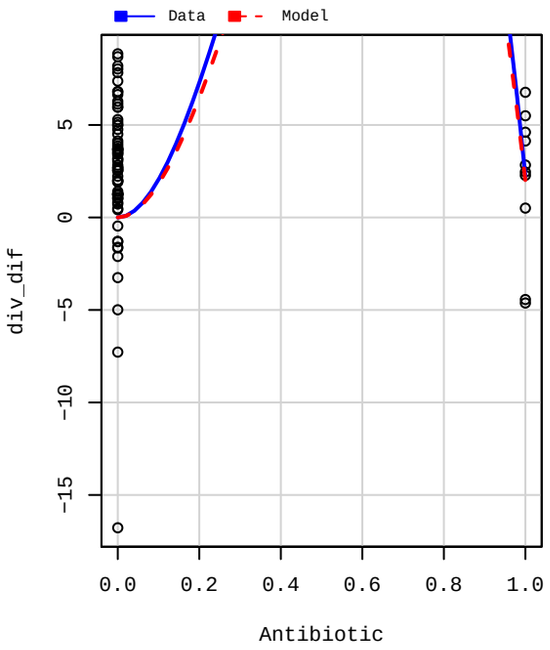

Data
Model
div_dif
Female

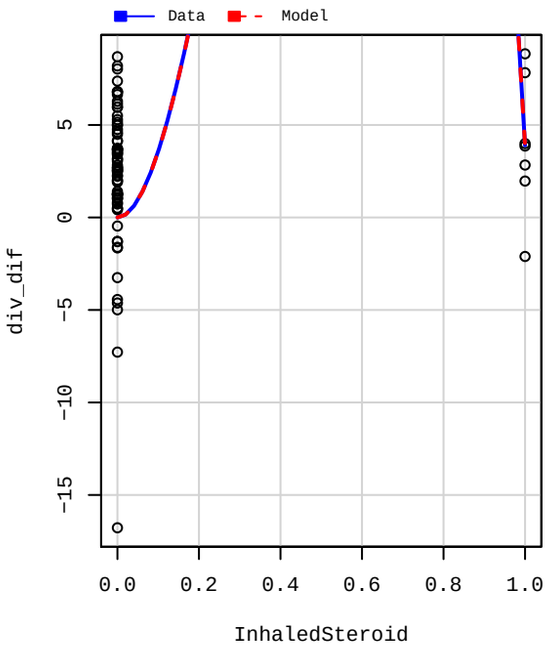

Data
Model
div_dif
AgeYrs

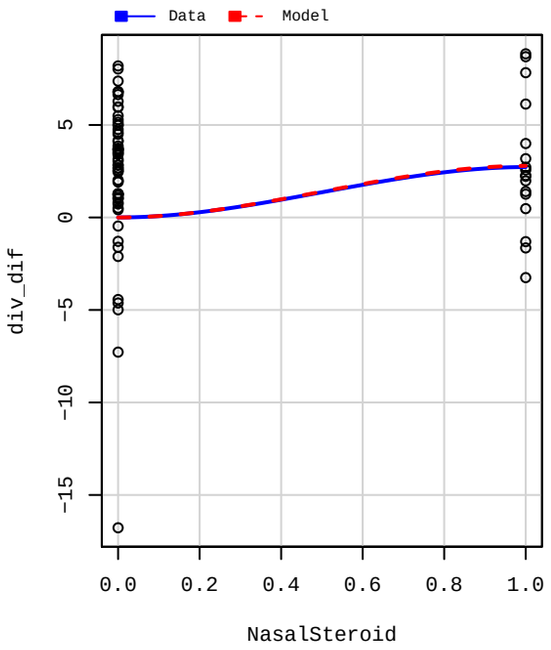

Data
Model
div_dif
CRS


Data
Model
div_dif
PPI

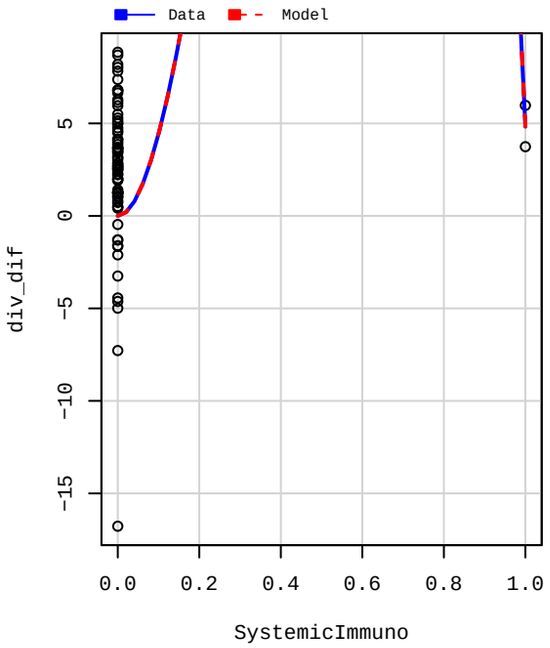

Data
Model
div_dif
Beta2

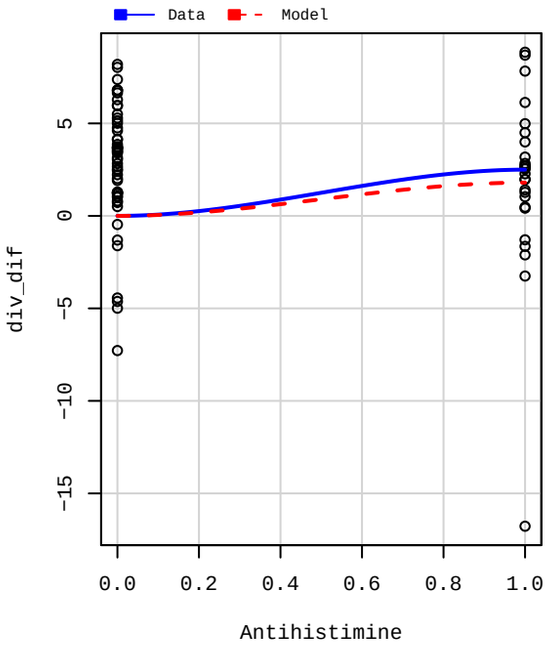

Data
Model
div_dif
Antibiotic

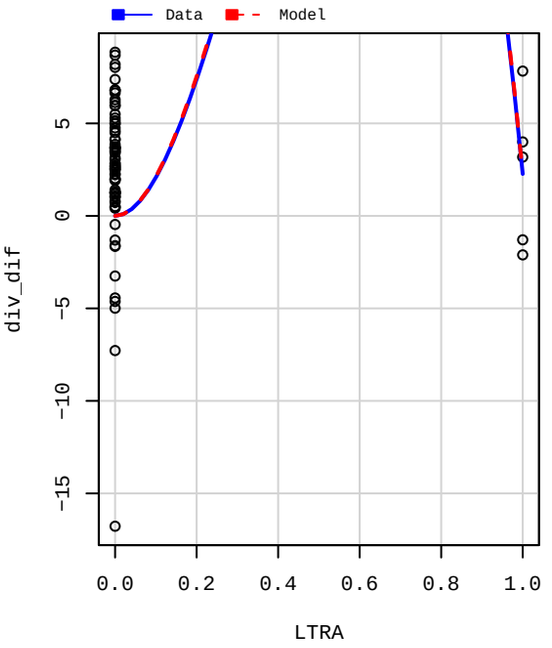

Data
Model
div_dif
InhaledSteroid

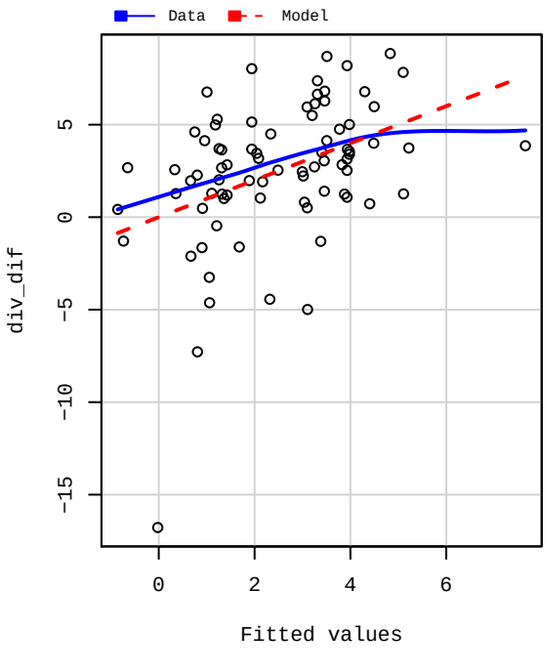

Data
Model
div_dif
NasalSteroid

Marginal Model Plots

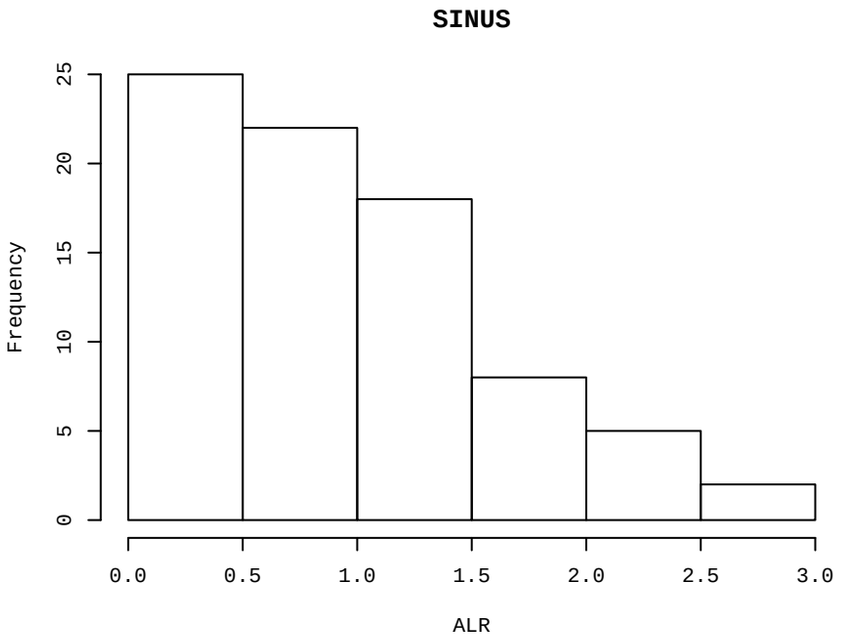


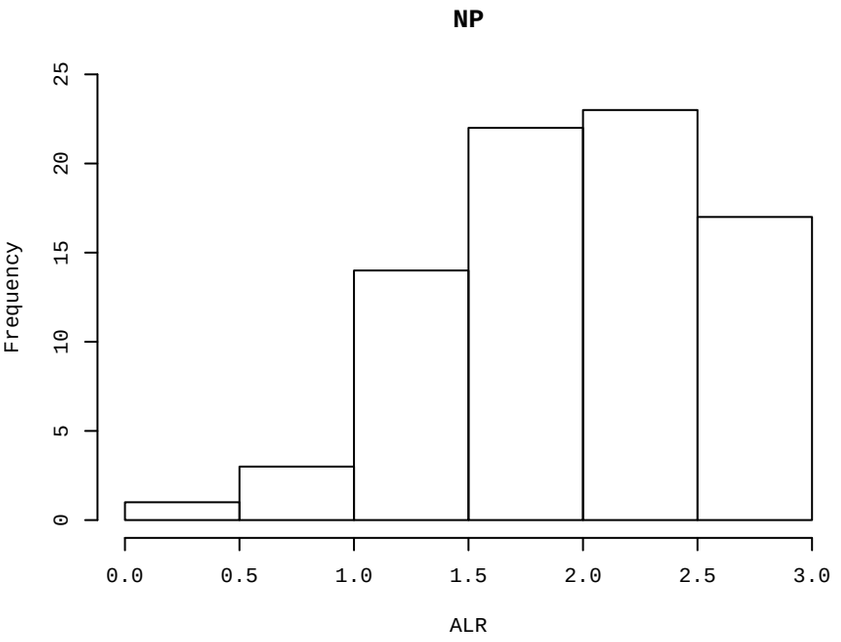


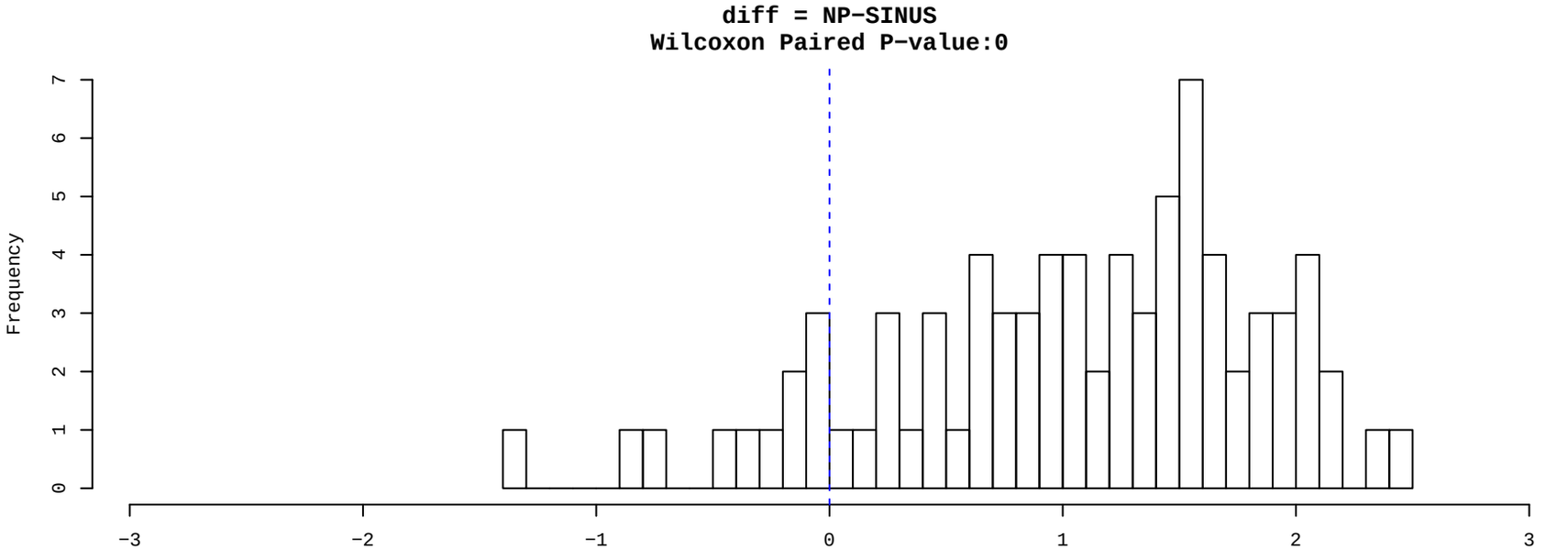


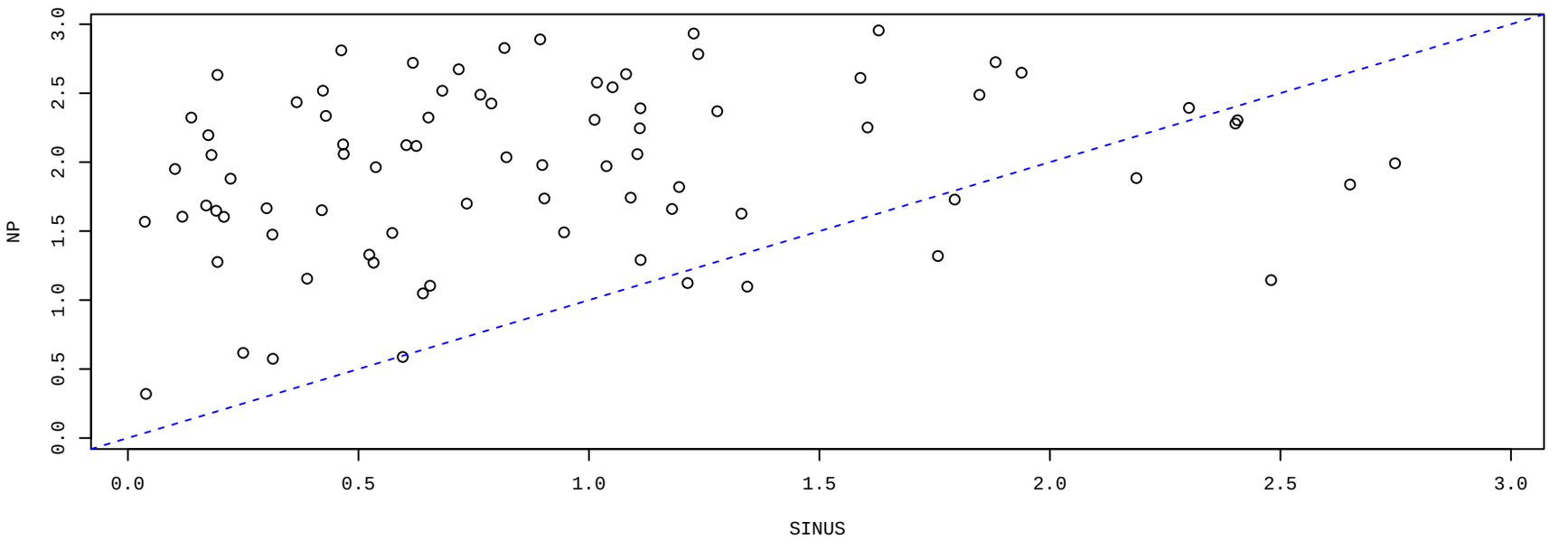


2.) Shannon


SINUS
Frequency
0
5
10
15
20
25
0.0
0.5
1.0
1.5
2.0
2.5
3.0
ALR


NP
Frequency
0
5
10
15
20
25
0.0
0.5
1.0
1.5
2.0
2.5
3.0
ALR


diff = NP−SINUS
Wilcoxon Paired P−value:0
Frequency
0
1
2
3
4
5
6
7
−3
−2
−1
0
1
2
3


NP
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
SINUS

2.) Shannon:

```
Call:
lm(formula = as.formula(model_str), data = model_pred)

Residuals:
    Min      1Q  Median      3Q     Max
−2.0688 −0.4970  0.1686  0.5157  1.2549

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.97932    0.25669   3.815 0.000299 ***
FirstGroup      0.08935    0.19392   0.461 0.646449
Female          0.54541    0.19983   2.729 0.008098 **
AgeYrs         −0.04330    0.02709  −1.598 0.114639
CRS            −0.24337    0.20087  −1.212 0.229927
PPI             0.79595    0.58546   1.360 0.178535
Beta2           0.24481    0.35039   0.699 0.487170
Antibiotic     −0.01726    0.28820  −0.060 0.952429
InhaledSteroid  0.48303    0.42581   1.134 0.260684
NasalSteroid    0.34756    0.26685   1.302 0.197217
SystemicImmuno −0.06434    0.71141  −0.090 0.928203
Antihistimine  −0.20513    0.25204  −0.814 0.418582
LTRA           −0.59008    0.47577  −1.240 0.219210
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.779 on 67 degrees of freedom
Multiple R−squared:  0.1992,Adjusted R−squared:  0.05577
F−statistic: 1.389 on 12 and 67 DF,  p−value: 0.1933
```

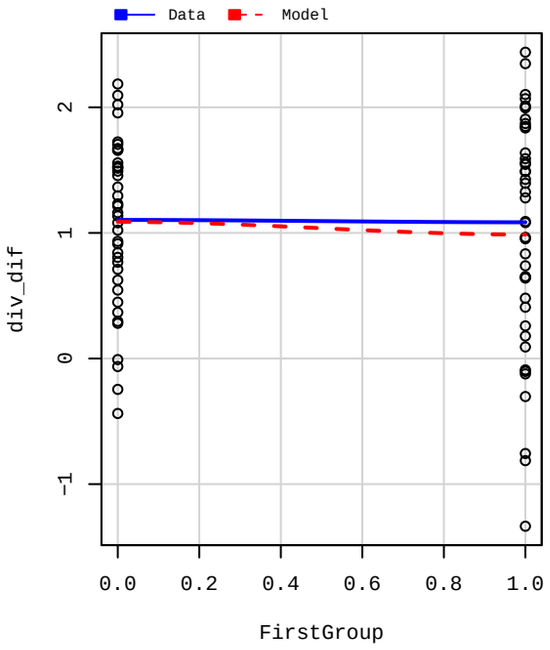
2.) Shannon:

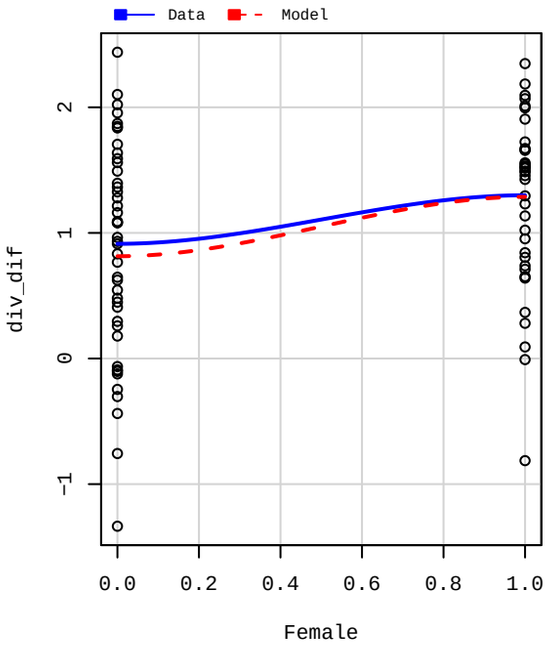
Analysis of Variance Table

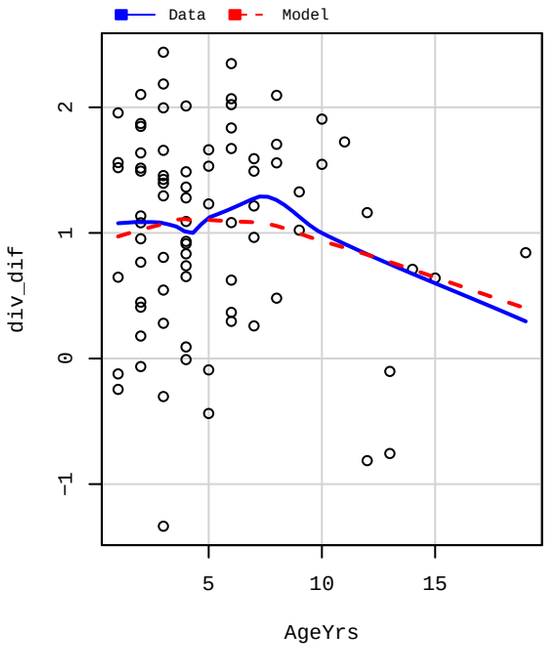
Response: div_dif

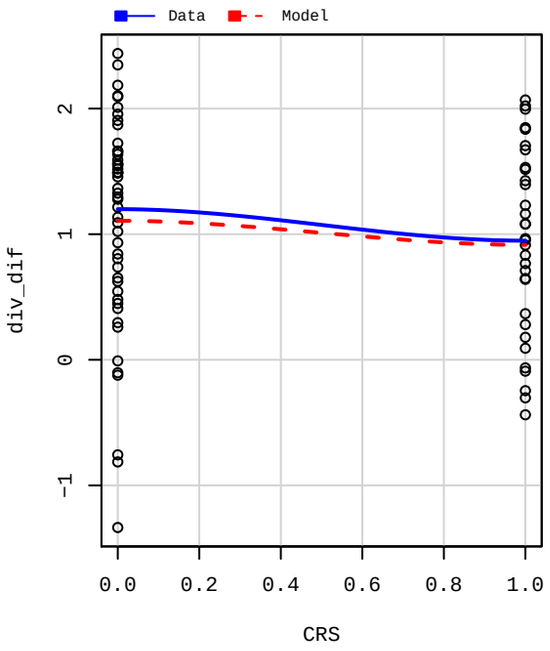
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
FirstGroup	1	0.148	0.14783	0.2436	0.62325	
Female	1	2.760	2.75963	4.5470	0.03665	*
AgeYrs	1	1.175	1.17544	1.9367	0.16863	
CRS	1	0.488	0.48816	0.8043	0.37302	
PPI	1	2.899	2.89943	4.7773	0.03234	*
Beta2	1	0.239	0.23901	0.3938	0.53243	
Antibiotic	1	0.002	0.00179	0.0030	0.95681	
InhaledSteroid	1	0.475	0.47539	0.7833	0.37930	
NasalSteroid	1	0.375	0.37509	0.6180	0.43455	
SystemicImmuno	1	0.060	0.06005	0.0989	0.75409	
Antihistimine	1	0.559	0.55943	0.9218	0.34046	
LTRA	1	0.934	0.93357	1.5382	0.21921	
Residuals	67	40.663	0.60692			

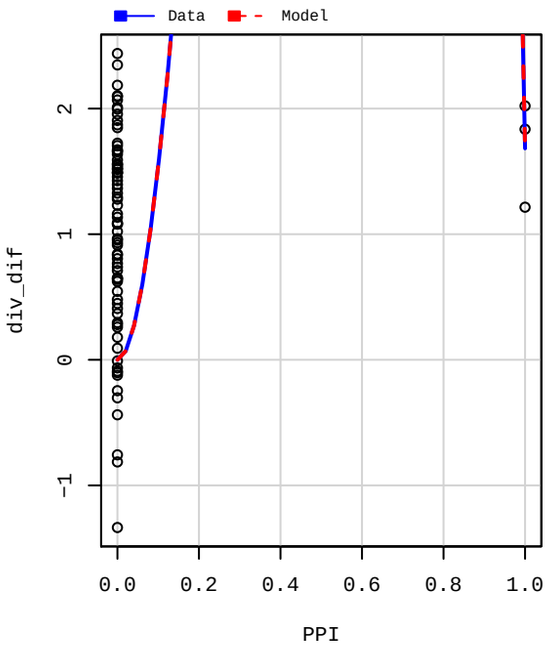
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

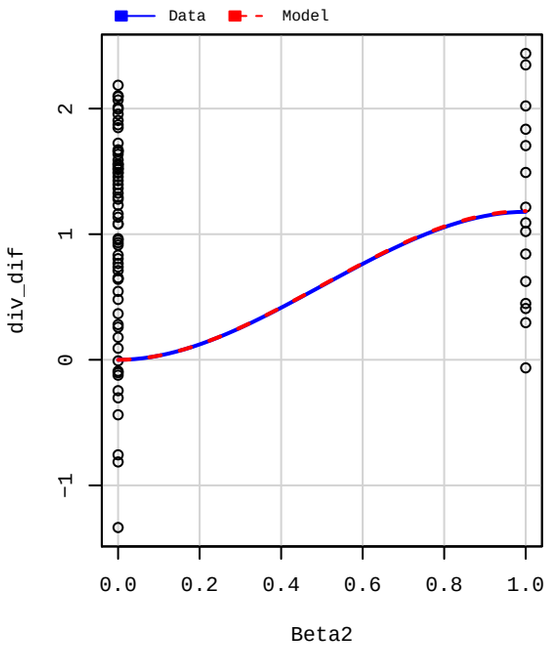

Data
Model
div_dif
FirstGroup

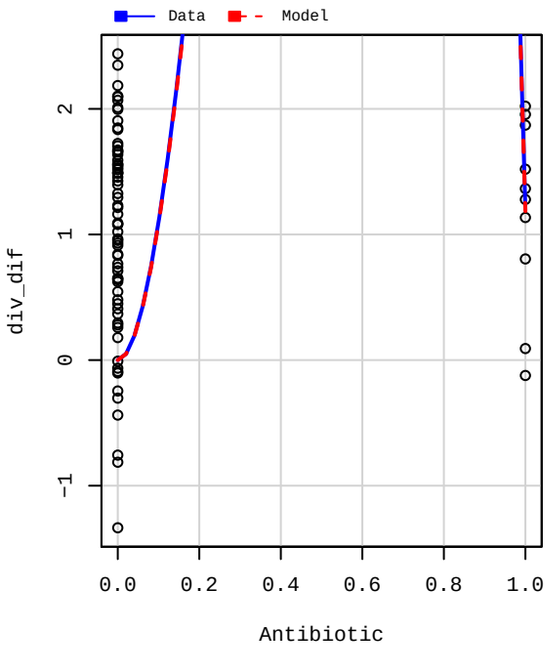

Data
Model
div_dif
Female

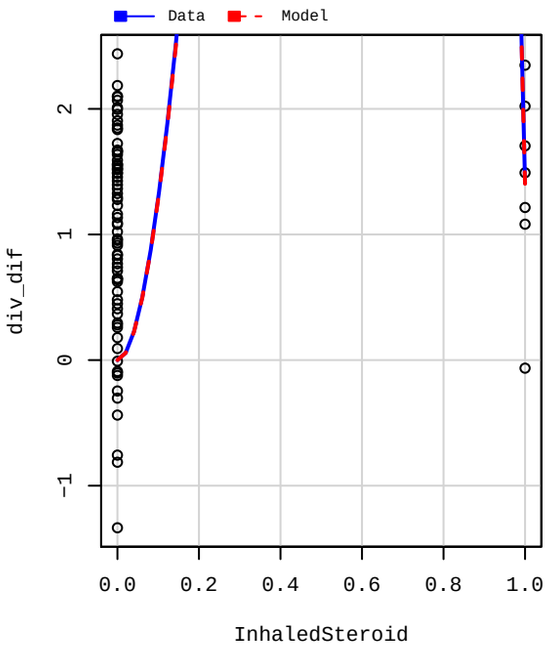

Data
Model
div_dif
AgeYrs

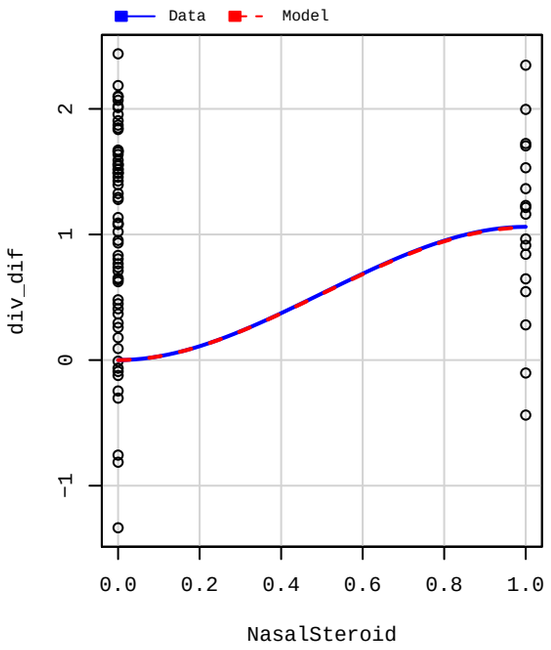

Data
Model
div_dif
CRS


Data
Model
div_dif
PPI

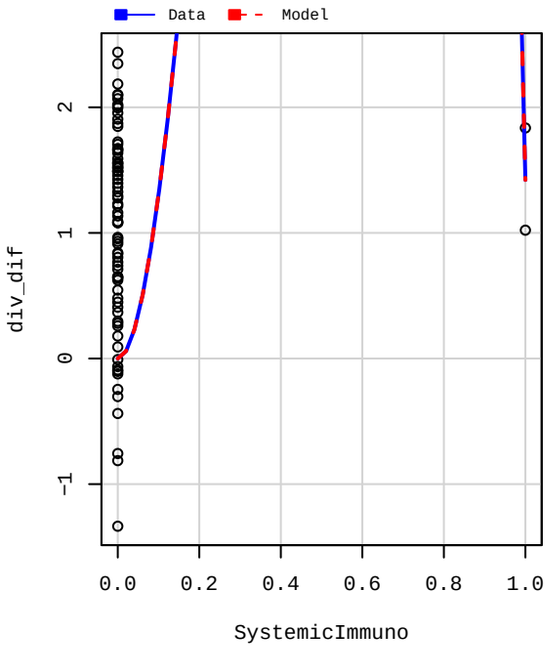

Data
Model
div_dif
Beta2

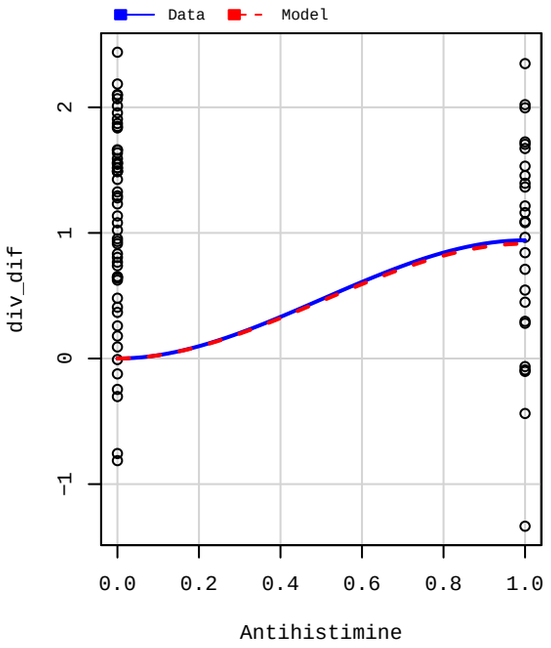

Data
Model
div_dif
Antibiotic

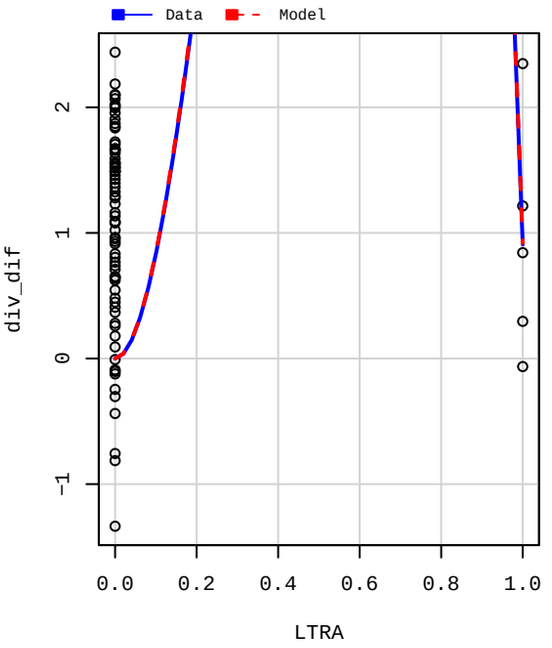

Data
Model
div_dif
InhaledSteroid

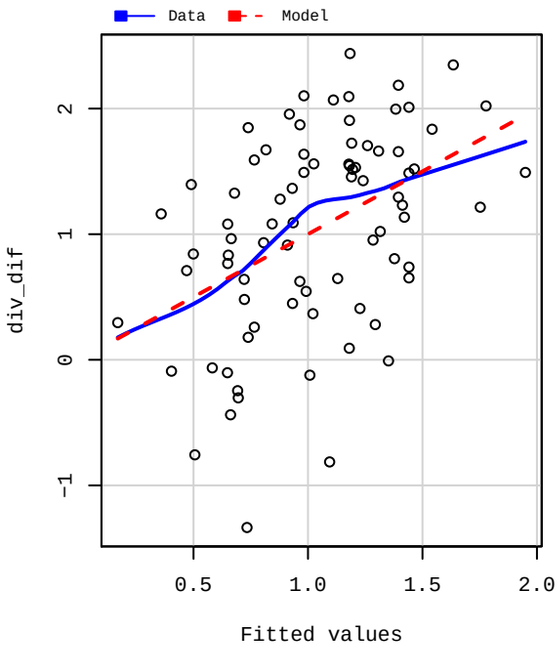

Data
Model
div_dif
NasalSteroid

Marginal Model Plots

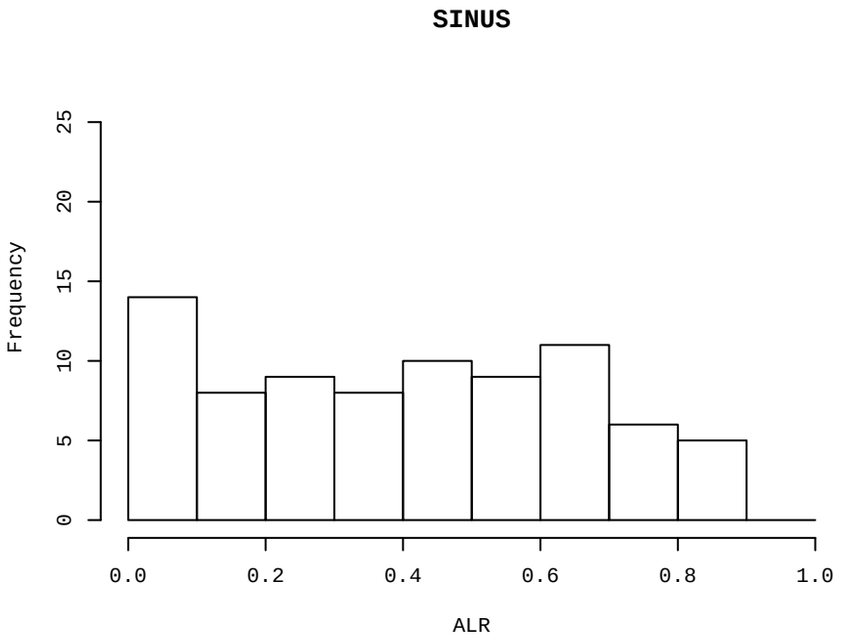


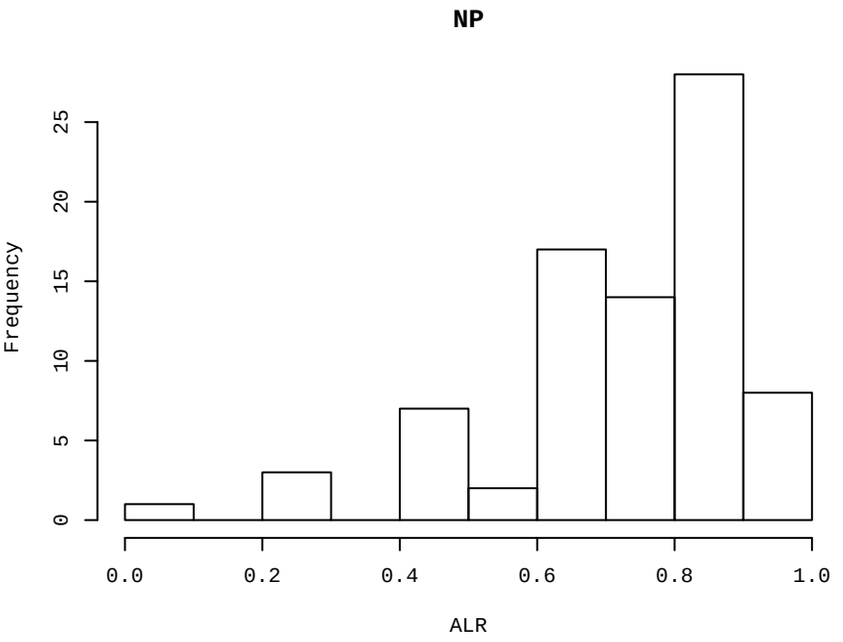


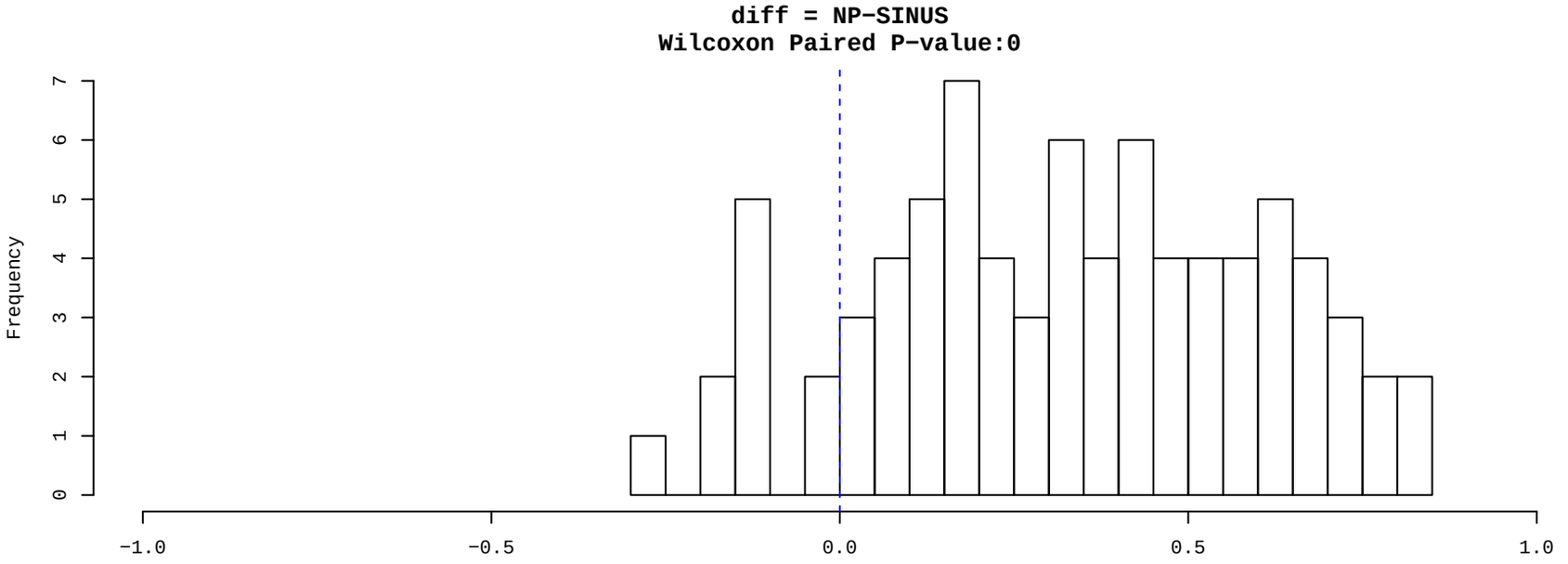


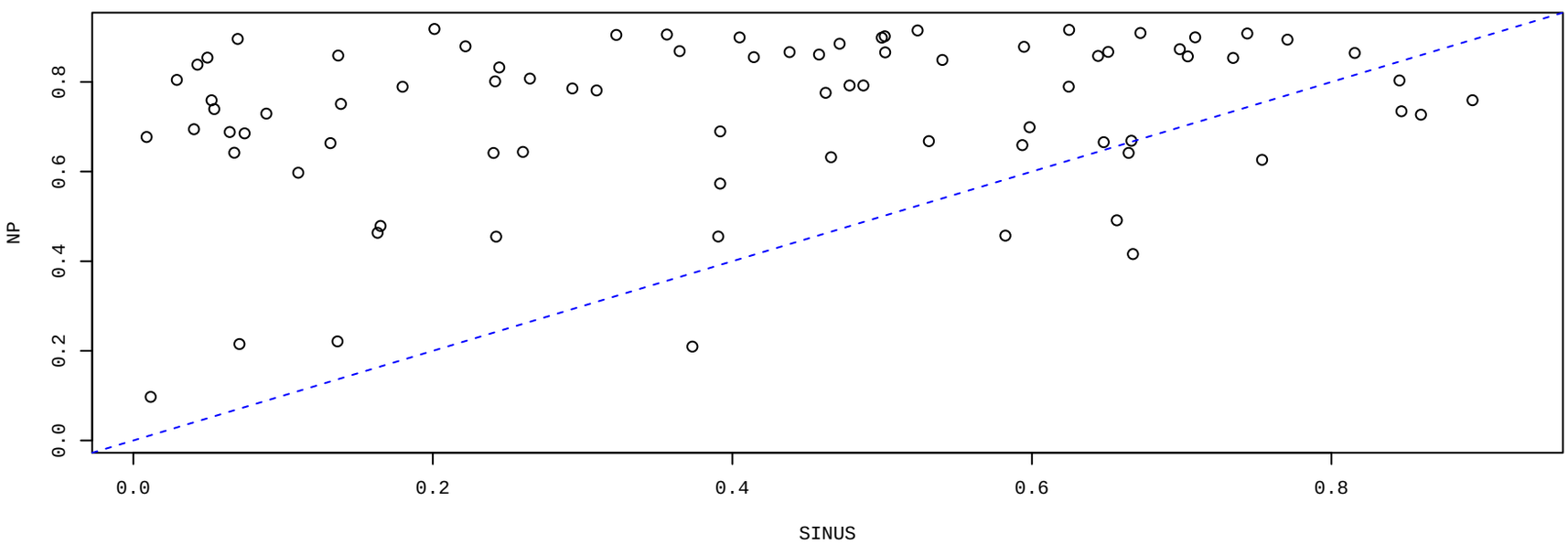


3.) Simpson


SINUS
Frequency
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
1.0
ALR


NP
Frequency
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
1.0
ALR


diff = NP−SINUS
Wilcoxon Paired P−value:0
Frequency
0
1
2
3
4
5
6
7
−1.0
−0.5
0.0
0.5
1.0


NP
0.0
0.2
0.4
0.6
0.8
0.0
0.2
0.4
0.6
0.8
SINUS

3.) Simpson:

```
Call:
lm(formula = as.formula(model_str), data = model_pred)

Residuals:
     Min       1Q   Median       3Q      Max
−0.58743 −0.18664  0.03936  0.18676  0.54064

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.317077   0.088571   3.580 0.000645 ***
FirstGroup      0.032435   0.066910   0.485 0.629429
Female          0.172786   0.068950   2.506 0.014647 *
AgeYrs         −0.016560   0.009346  −1.772 0.080971 .
CRS            −0.067971   0.069308  −0.981 0.330267
PPI             0.264097   0.202012   1.307 0.195568
Beta2          −0.014175   0.120900  −0.117 0.907016
Antibiotic      0.009521   0.099441   0.096 0.924012
InhaledSteroid  0.216379   0.146926   1.473 0.145512
NasalSteroid    0.086907   0.092075   0.944 0.348631
SystemicImmuno −0.077234   0.245469  −0.315 0.754013
Antihistimine  −0.016269   0.086965  −0.187 0.852169
LTRA           −0.188086   0.164165  −1.146 0.255989
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.2688 on 67 degrees of freedom
Multiple R−squared:  0.1779,Adjusted R−squared:  0.03072
F−statistic: 1.209 on 12 and 67 DF,  p−value: 0.2958
```

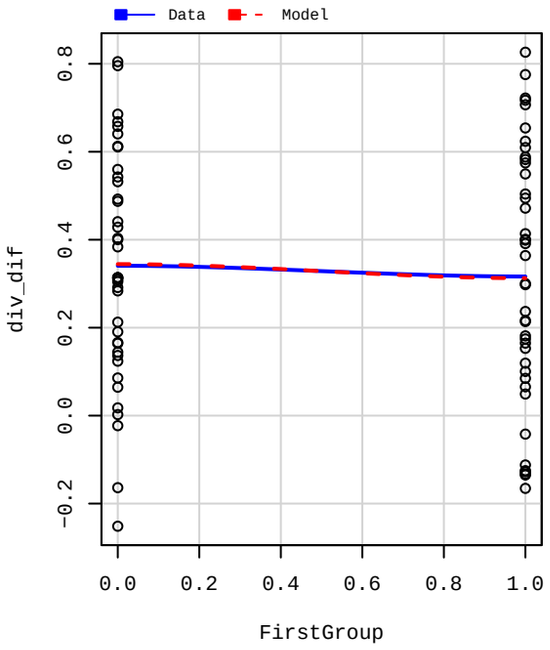
3.) Simpson:

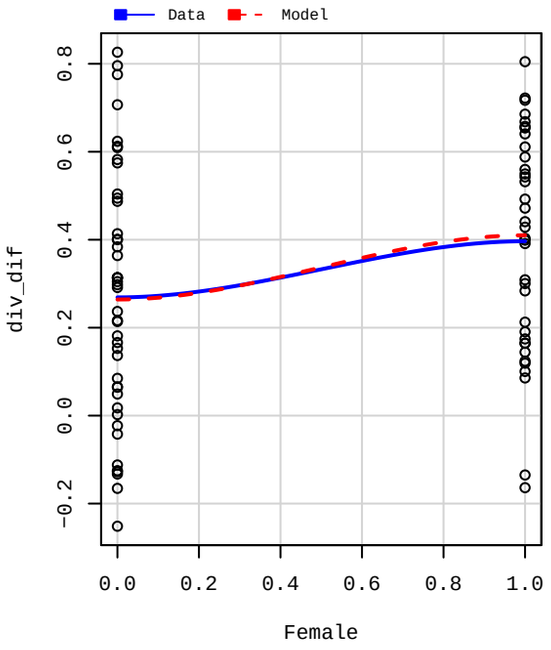
Analysis of Variance Table

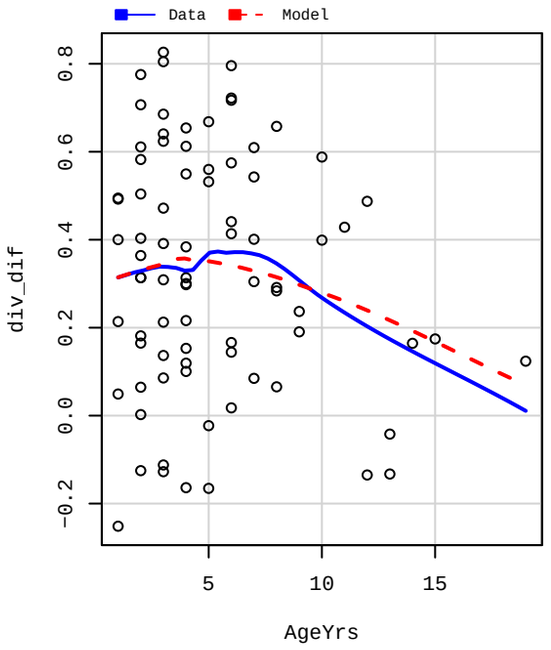
Response: div_dif

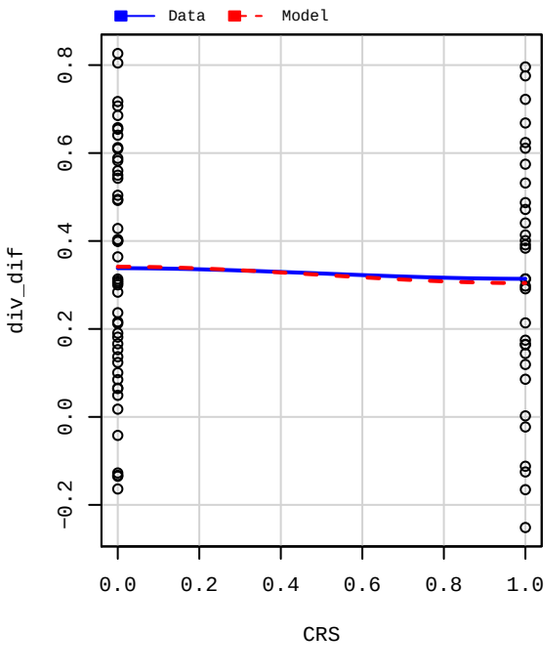
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
FirstGroup	1	0.0104	0.010374	0.1436	0.70595	
Female	1	0.2615	0.261505	3.6190	0.06142	.
AgeYrs	1	0.2135	0.213531	2.9551	0.09022	.
CRS	1	0.0114	0.011394	0.1577	0.69256	
PPI	1	0.2368	0.236815	3.2773	0.07473	.
Beta2	1	0.0019	0.001866	0.0258	0.87282	
Antibiotic	1	0.0048	0.004773	0.0661	0.79796	
InhaledSteroid	1	0.1644	0.164365	2.2747	0.13620	
NasalSteroid	1	0.0411	0.041054	0.5682	0.45363	
SystemicImmuno	1	0.0001	0.000142	0.0020	0.96483	
Antihistimine	1	0.0073	0.007329	0.1014	0.75112	
LTRA	1	0.0949	0.094851	1.3127	0.25599	
Residuals	67	4.8413	0.072259			

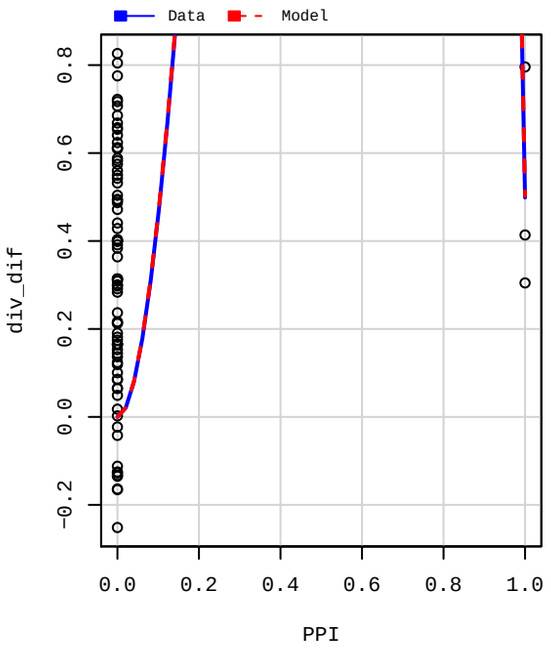
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

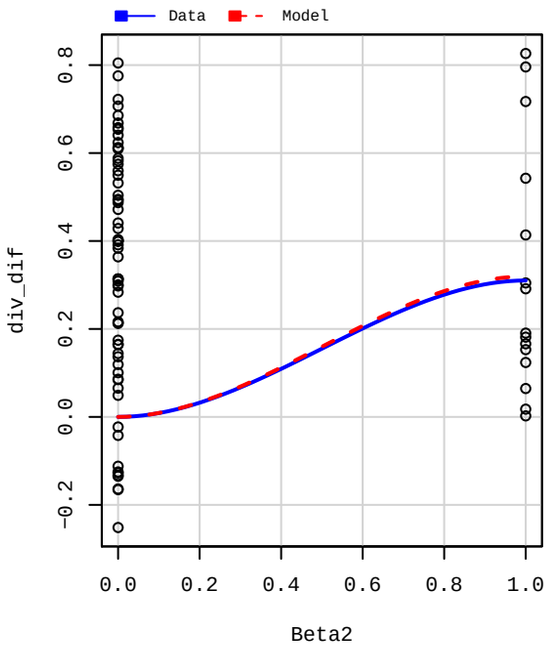

Data
Model
div_dif
FirstGroup

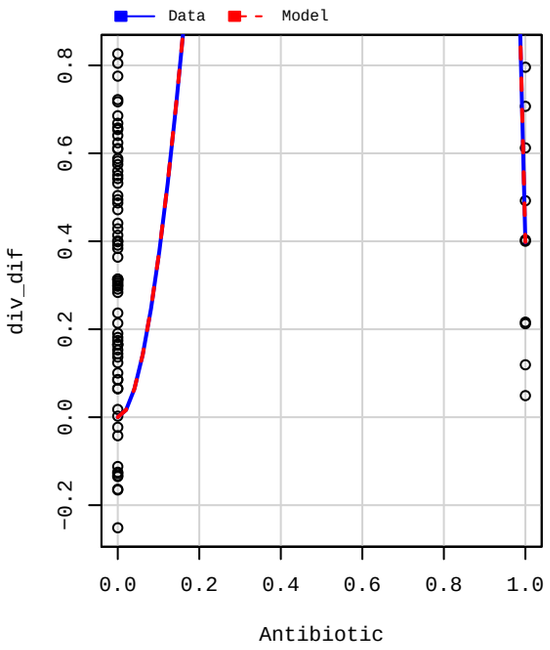

Data
Model
div_dif
Female

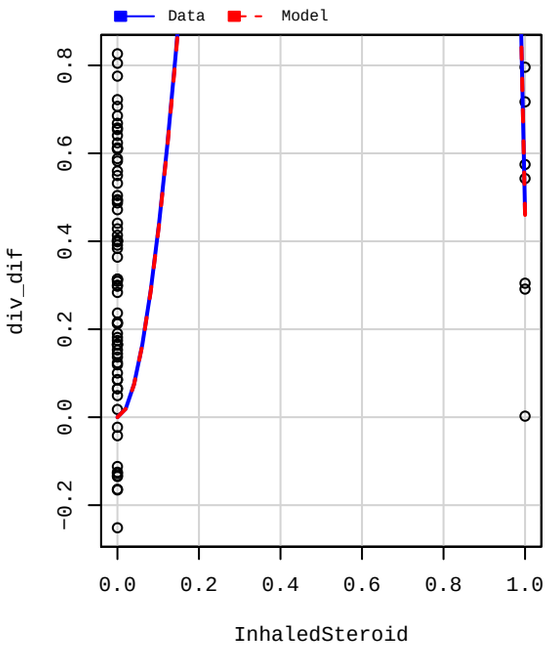

Data
Model
div_dif
AgeYrs

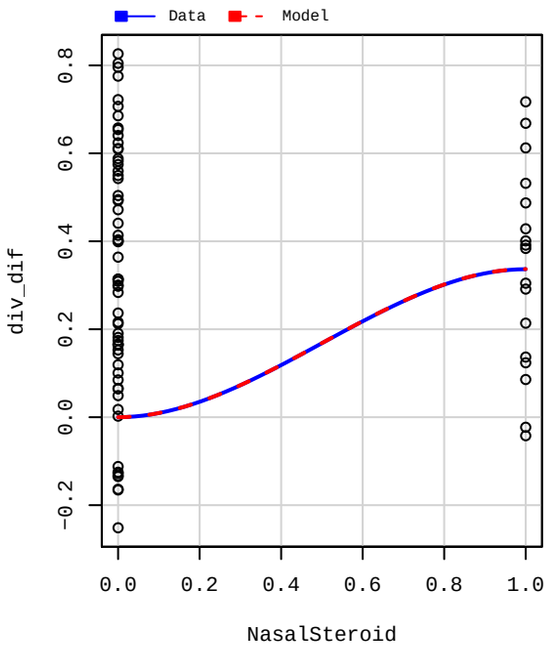

Data
Model
div_dif
CRS


Data
Model
div_dif
PPI

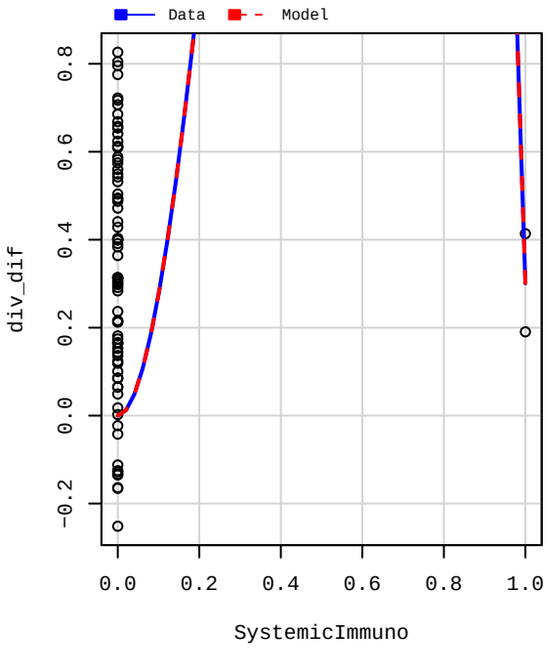

Data
Model
div_dif
Beta2

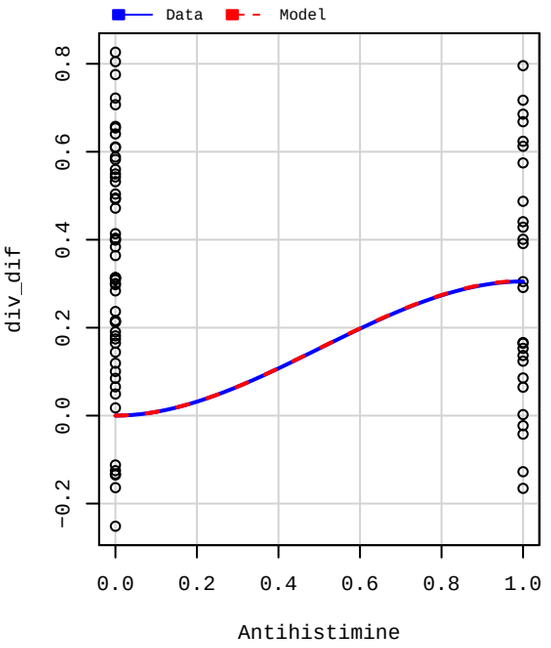

Data
Model
div_dif
Antibiotic

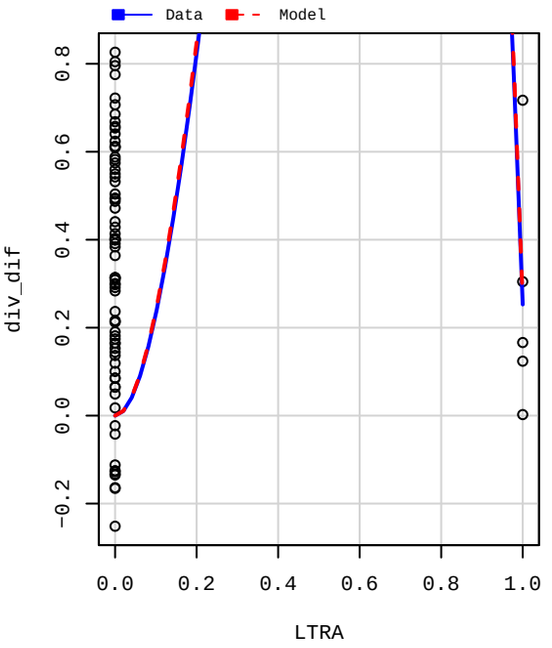

Data
Model
div_dif
InhaledSteroid

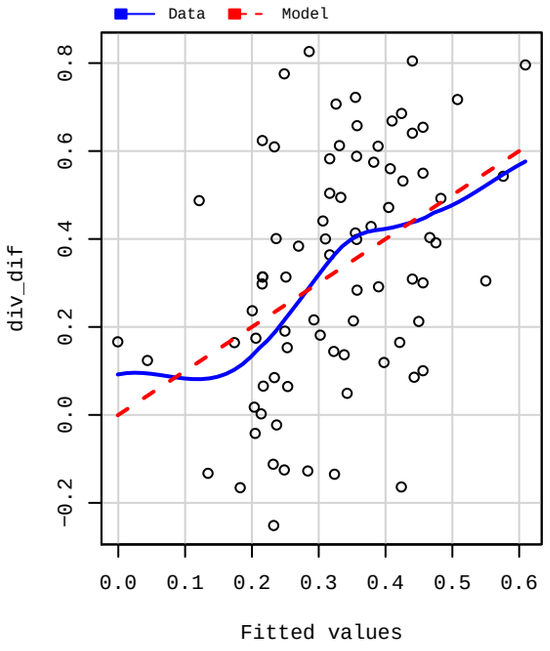

Data
Model
div_dif
NasalSteroid

Marginal Model Plots

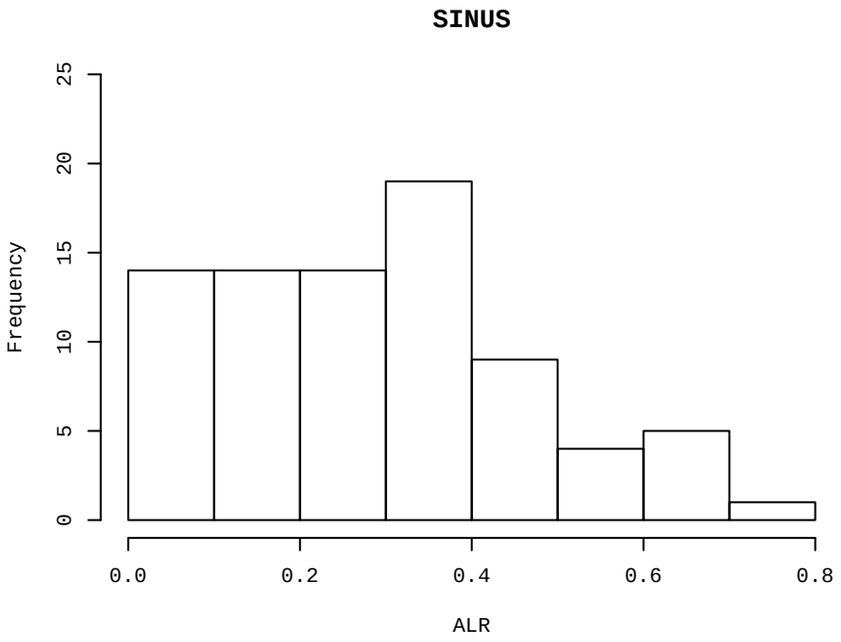


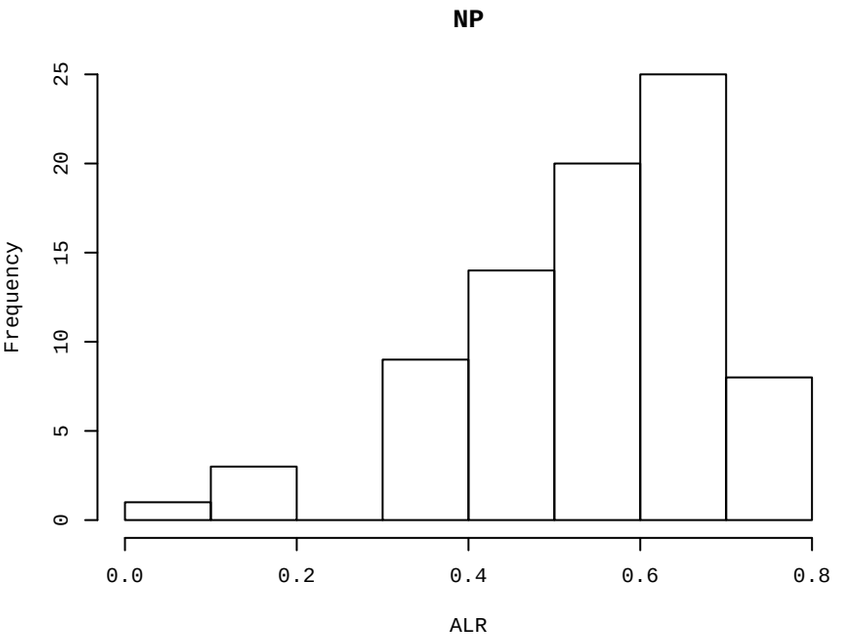


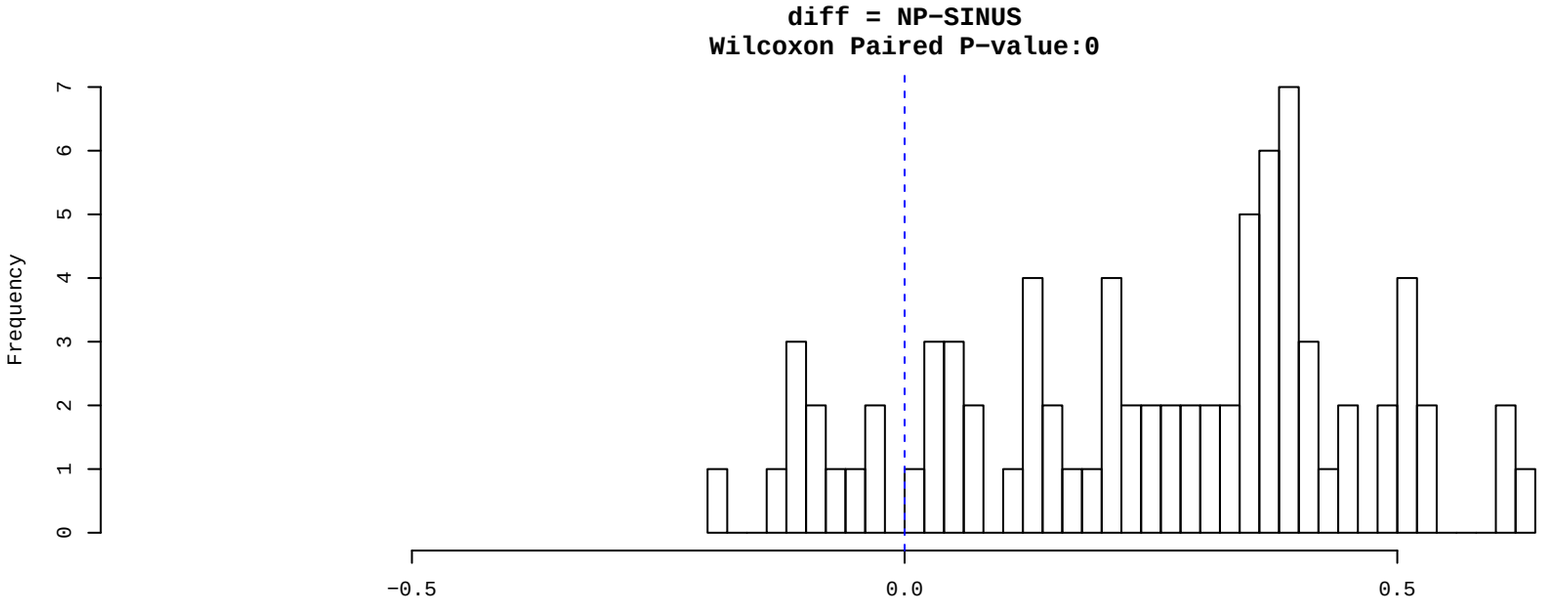


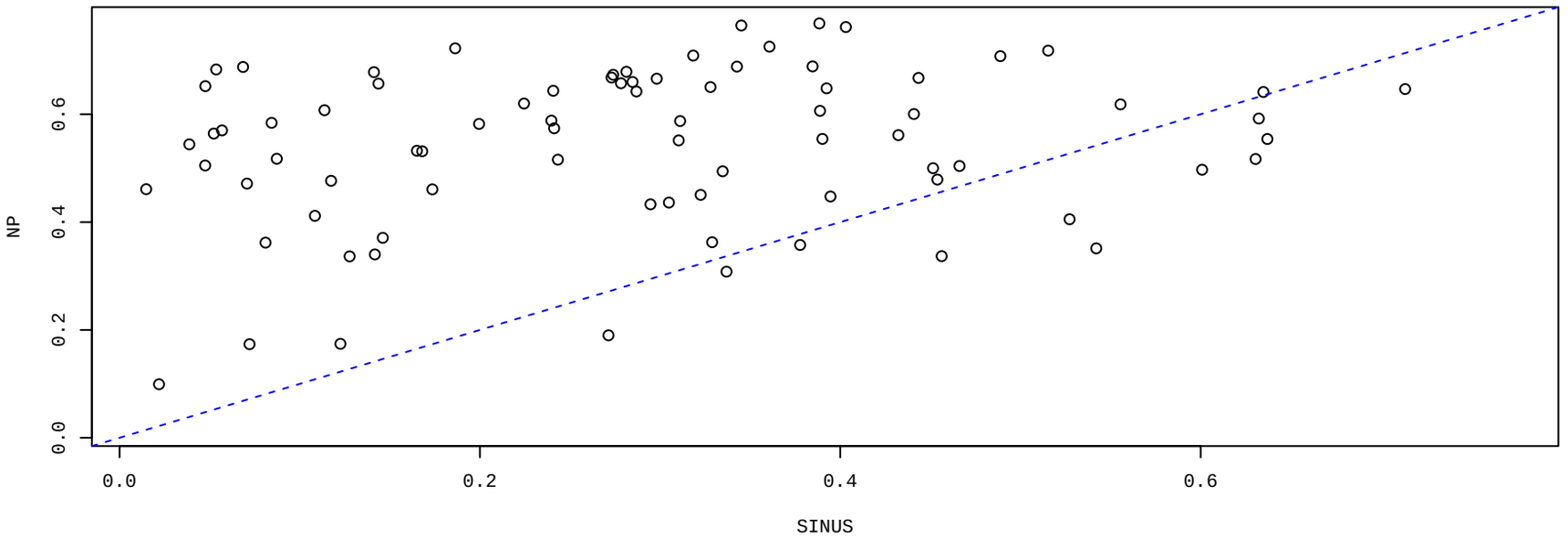


4.) Evenness


SINUS
Frequency
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
ALR


NP
Frequency
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
ALR


diff = NP−SINUS
Wilcoxon Paired P−value:0
Frequency
0
1
2
3
4
5
6
7
−0.5
0.0
0.5


NP
0.0
0.2
0.4
0.6
0.0
0.2
0.4
0.6
SINUS

4.) Evenness:

```
Call:
lm(formula = as.formula(model_str), data = model_pred)

Residuals:
     Min       1Q   Median       3Q      Max
−0.43098 −0.15033  0.03166  0.13679  0.43939

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     0.253698   0.065007   3.903 0.000223 ***
FirstGroup     −0.001017   0.049109  −0.021 0.983540
Female          0.129538   0.050606   2.560 0.012737 *
AgeYrs         −0.008378   0.006860  −1.221 0.226260
CRS            −0.059287   0.050869  −1.165 0.247959
PPI             0.211650   0.148267   1.427 0.158083
Beta2          −0.047851   0.088735  −0.539 0.591498
Antibiotic      0.004297   0.072985   0.059 0.953222
InhaledSteroid  0.173053   0.107837   1.605 0.113248
NasalSteroid    0.065883   0.067579   0.975 0.333118
SystemicImmuno −0.010283   0.180163  −0.057 0.954656
Antihistimine  −0.049105   0.063828  −0.769 0.444396
LTRA           −0.078324   0.120489  −0.650 0.517881
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1973 on 67 degrees of freedom
Multiple R−squared:  0.1934,Adjusted R−squared:  0.04898
F−statistic: 1.339 on 12 and 67 DF,  p−value: 0.2182
```

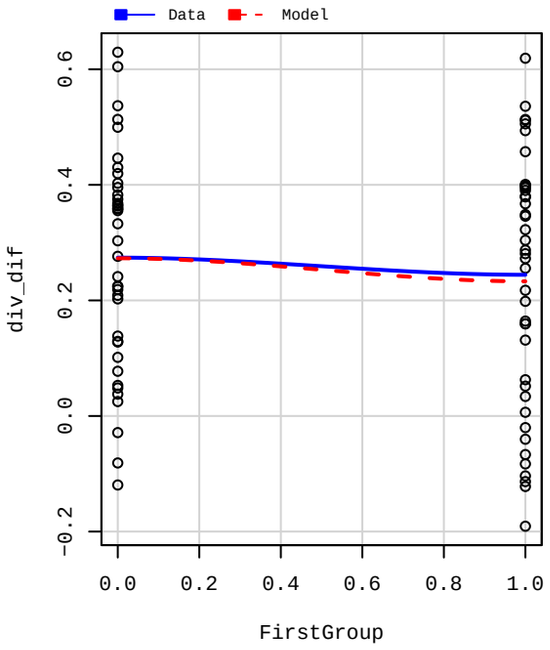
4.) Evenness:

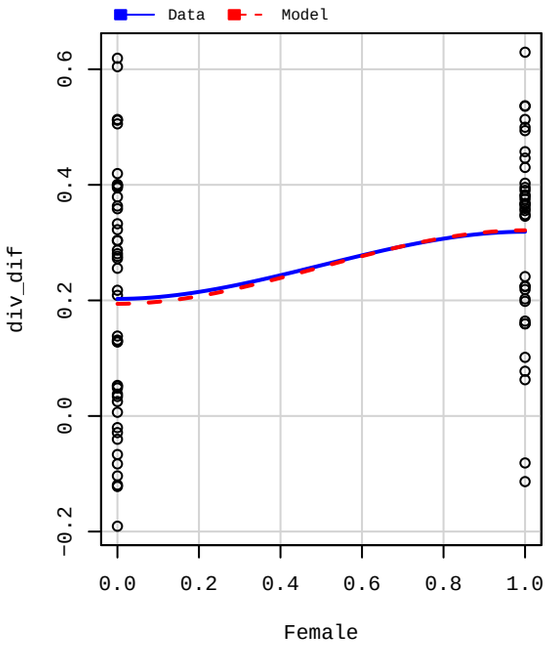
Analysis of Variance Table

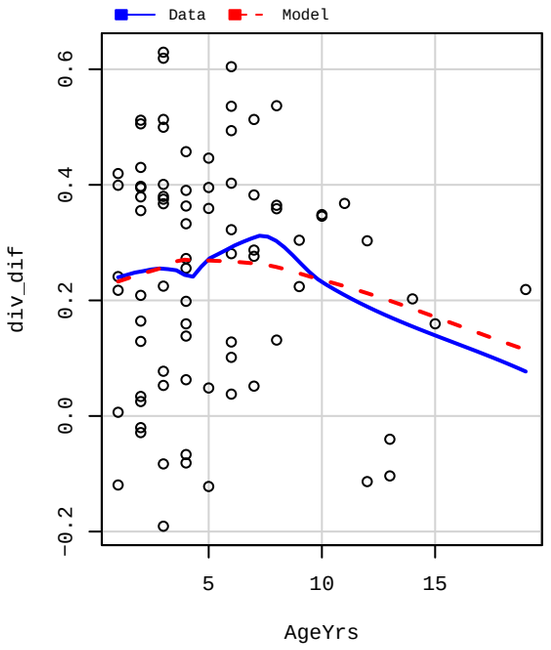
Response: div_dif

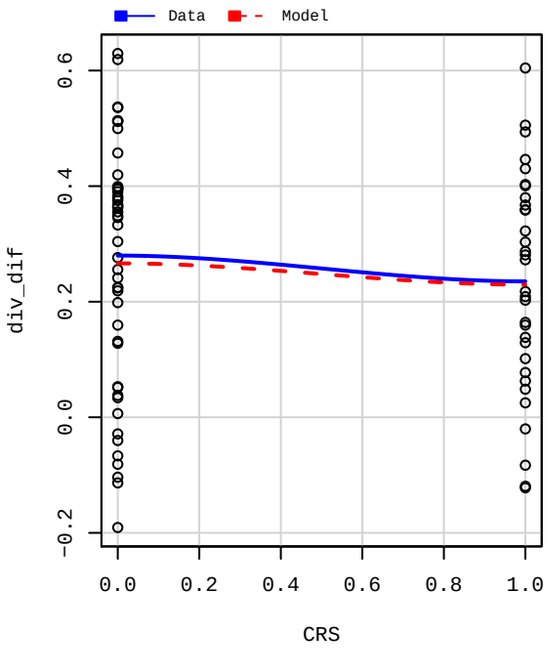
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
FirstGroup	1	0.02599	0.025990	0.6677	0.41675	
Female	1	0.21006	0.210063	5.3966	0.02322	*
AgeYrs	1	0.05642	0.056424	1.4496	0.23283	
CRS	1	0.01738	0.017378	0.4465	0.50632	
PPI	1	0.15544	0.155443	3.9934	0.04974	*
Beta2	1	0.00763	0.007633	0.1961	0.65931	
Antibiotic	1	0.00142	0.001420	0.0365	0.84910	
InhaledSteroid	1	0.09254	0.092536	2.3773	0.12782	
NasalSteroid	1	0.01235	0.012348	0.3172	0.57516	
SystemicImmuno	1	0.00177	0.001768	0.0454	0.83186	
Antihistimine	1	0.02800	0.028002	0.7194	0.39937	
LTRA	1	0.01645	0.016448	0.4226	0.51788	
Residuals	67	2.60795	0.038925			

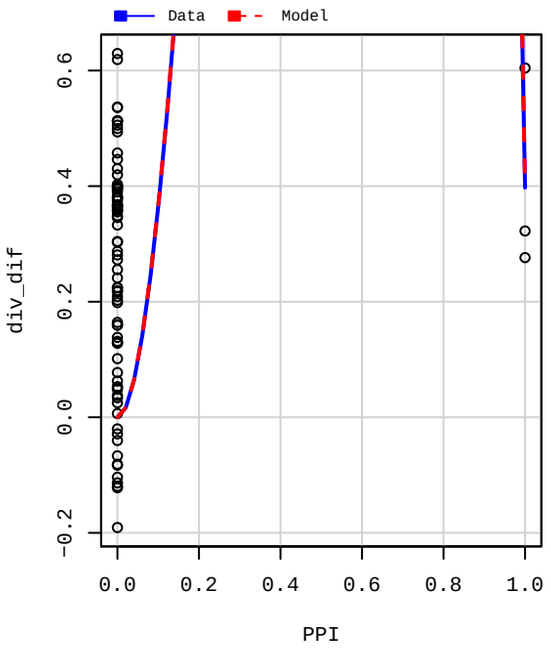
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

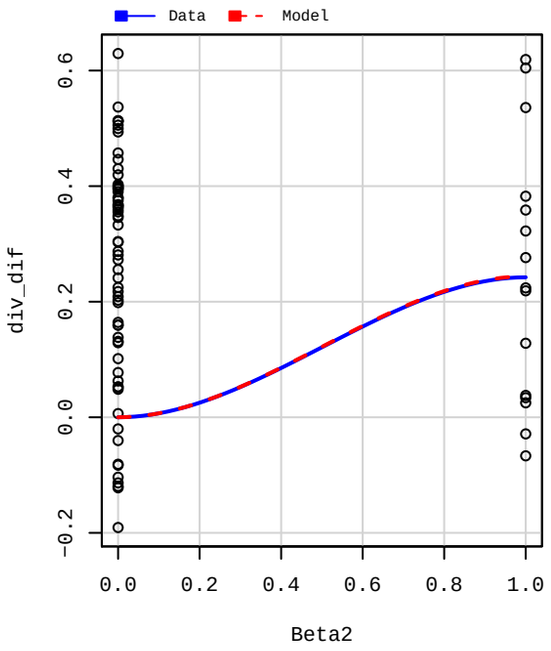

Data
Model
div_dif
FirstGroup

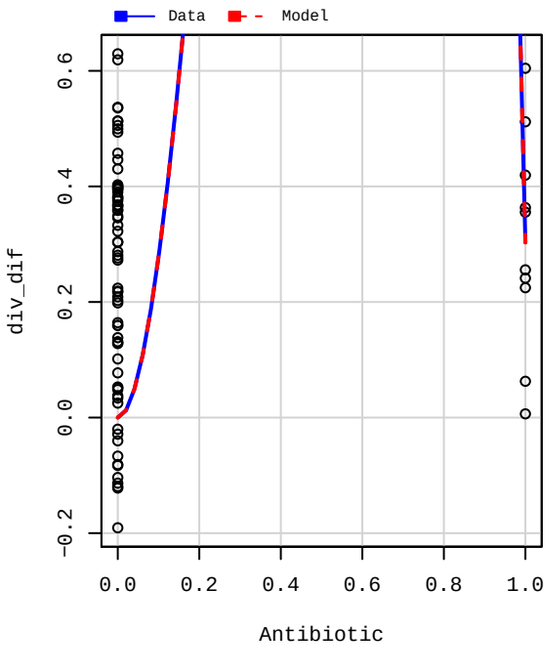

Data
Model
div_dif
Female

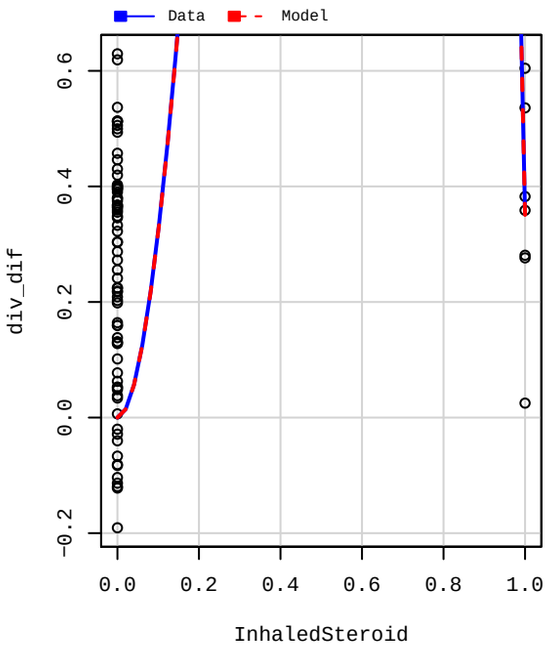

Data
Model
div_dif
AgeYrs

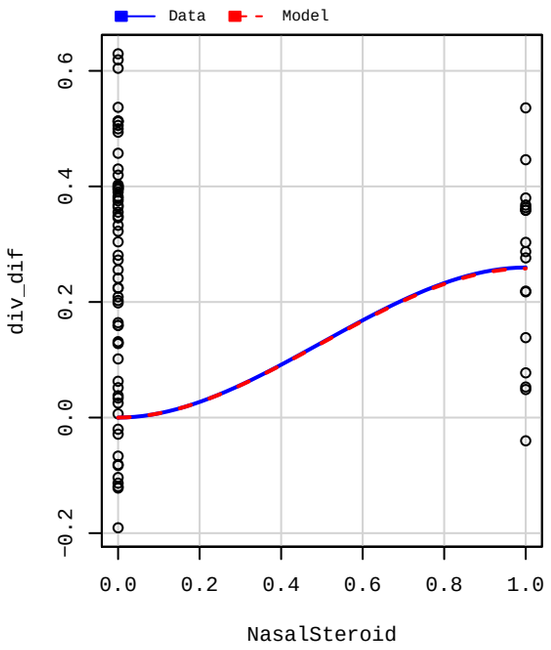

Data
Model
div_dif
CRS


Data
Model
div_dif
PPI

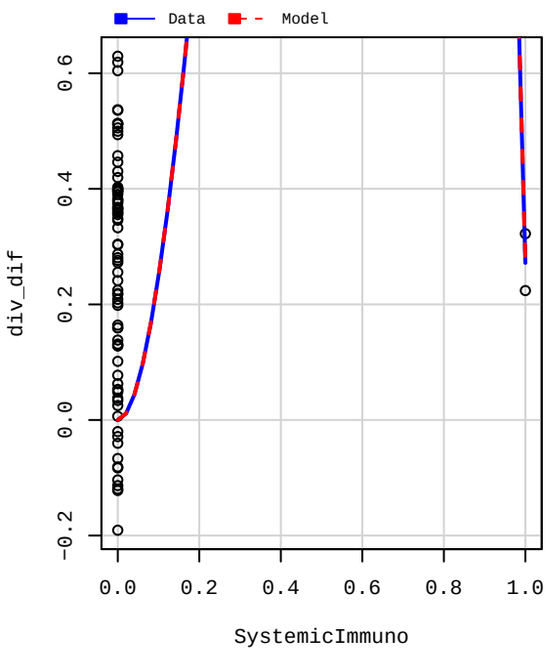

Data
Model
div_dif
Beta2

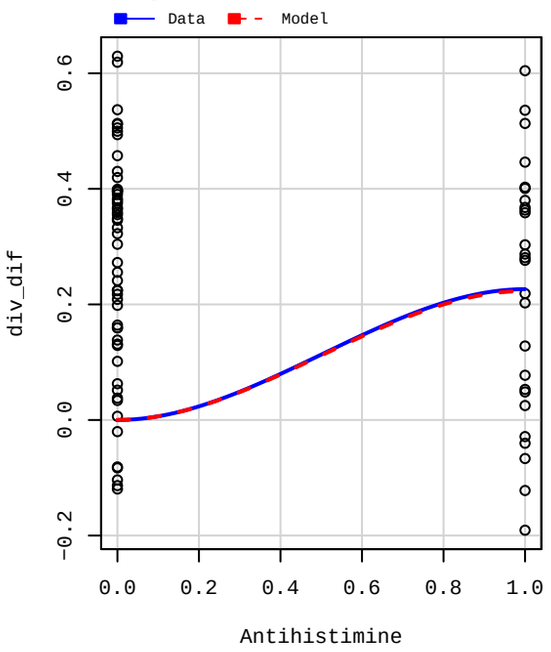

Data
Model
div_dif
Antibiotic

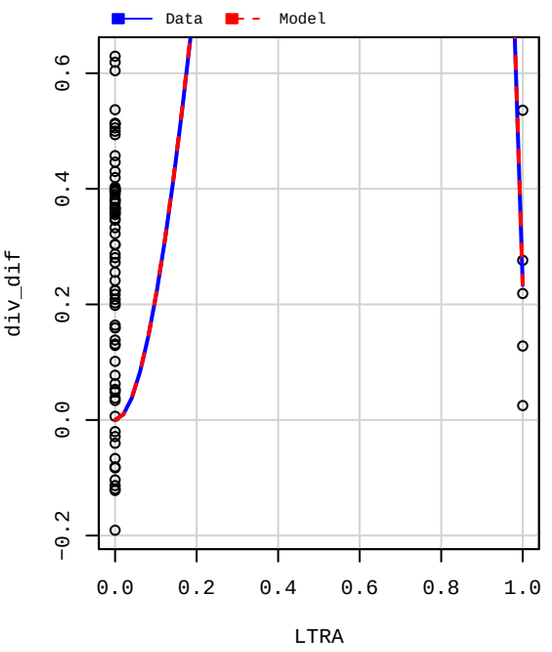

Data
Model
div_dif
InhaledSteroid

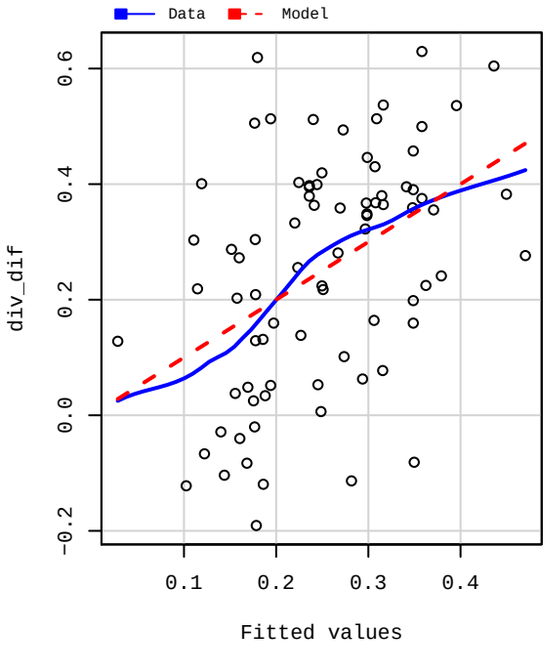

Data
Model
div_dif
NasalSteroid

Marginal Model Plots

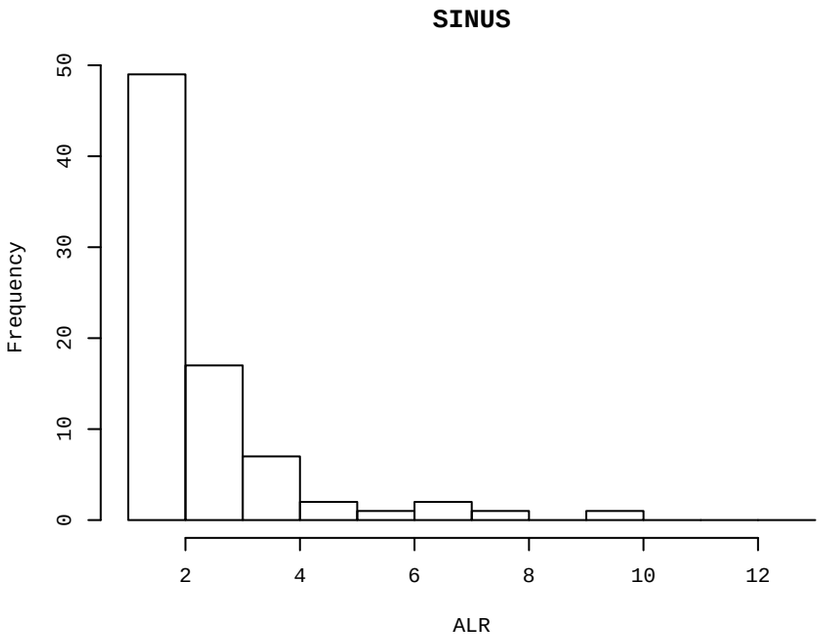


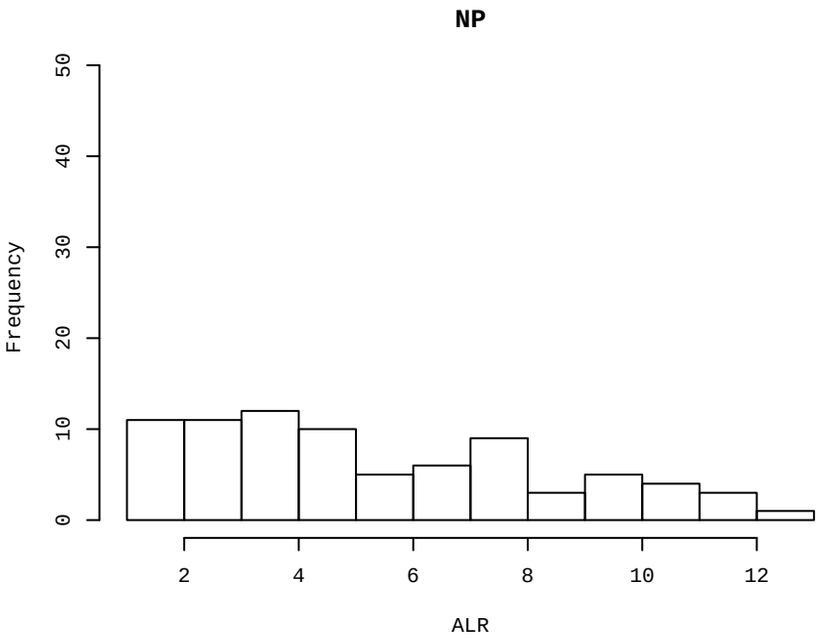


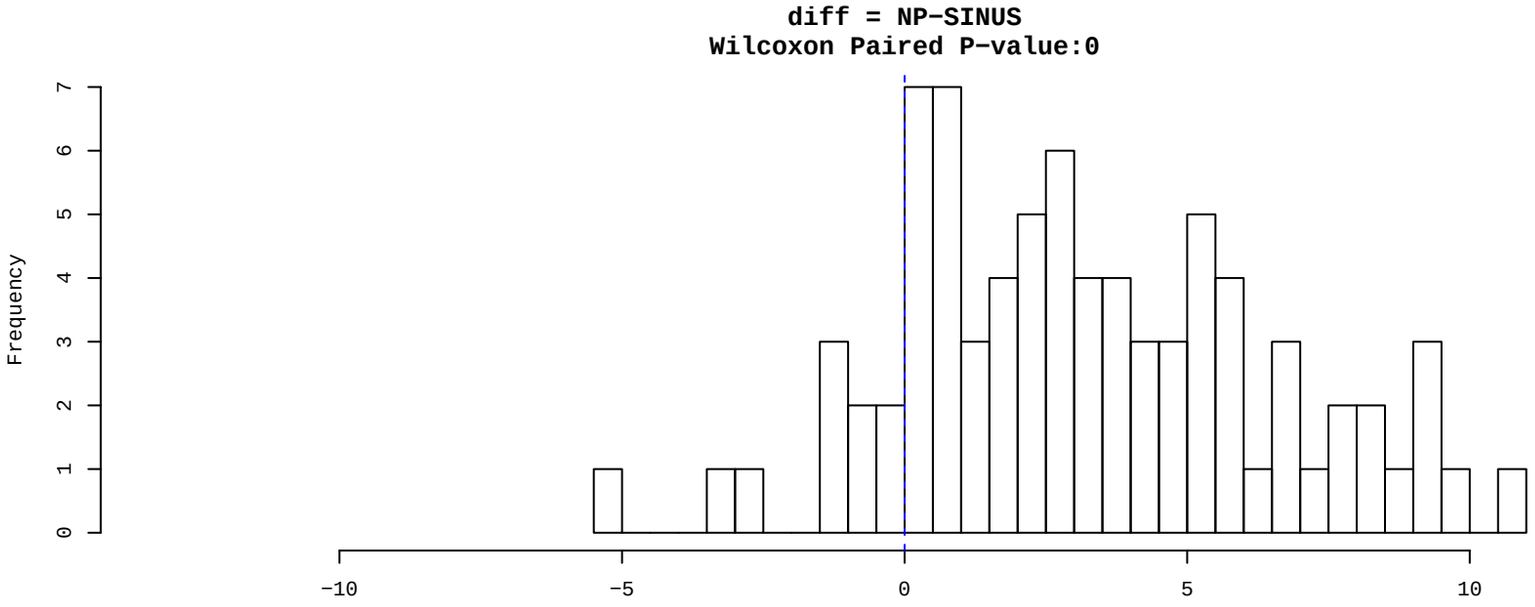


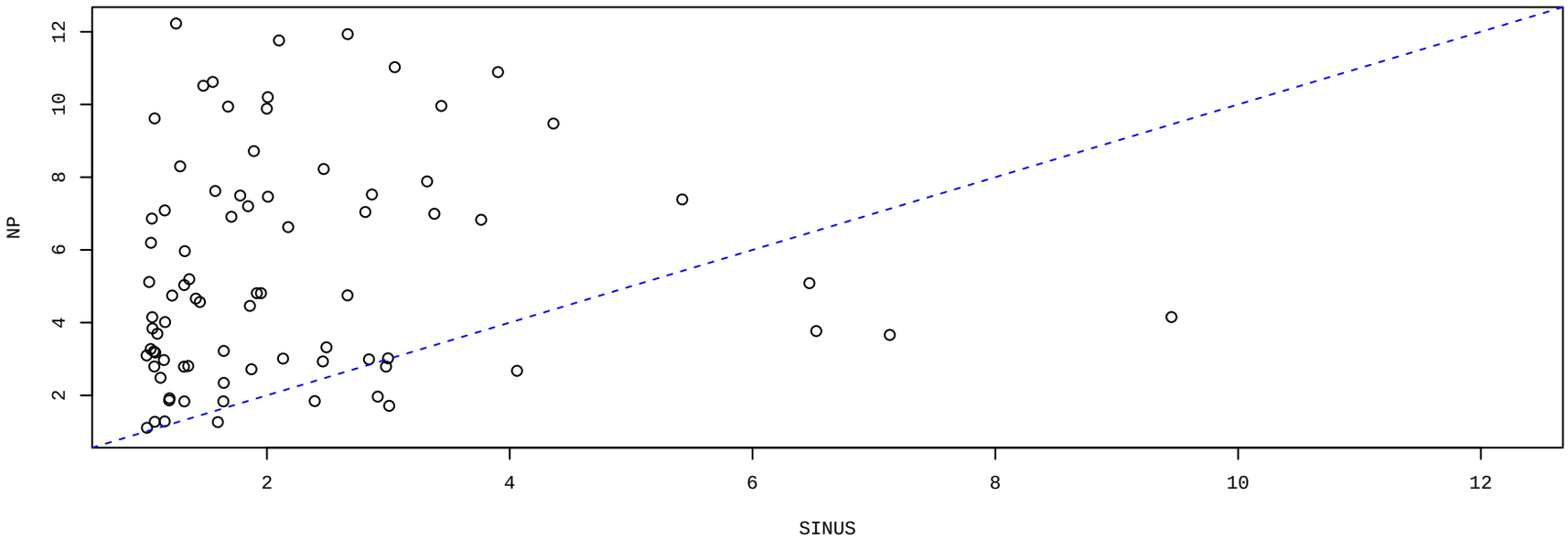


5.) SimpsonsRecip









5.) SimpsonsRecip:

```
Call:
lm(formula = as.formula(model_str), data = model_pred)

Residuals:
    Min      1Q  Median      3Q     Max 
−9.2361 −2.1071 −0.3549  1.9520  6.2666 

Coefficients:
               Estimate Std. Error t value Pr(>|t|)  
(Intercept)     1.82441    1.06899   1.707   0.0925 .
FirstGroup      1.09126    0.80756   1.351   0.1811  
Female          1.87605    0.83218   2.254   0.0274 *
AgeYrs         −0.07104    0.11280  −0.630   0.5310  
CRS            −0.92731    0.83651  −1.109   0.2716  
PPI             0.02288    2.43815   0.009   0.9925  
Beta2           1.16776    1.45919   0.800   0.4264  
Antibiotic      0.80120    1.20019   0.668   0.5067  
InhaledSteroid  2.20852    1.77330   1.245   0.2173  
NasalSteroid    1.38500    1.11129   1.246   0.2170  
SystemicImmuno  3.18474    2.96266   1.075   0.2862  
Antihistimine  −0.47780    1.04961  −0.455   0.6504  
LTRA           −0.92607    1.98137  −0.467   0.6417  
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.244 on 67 degrees of freedom
Multiple R−squared:  0.1724,Adjusted R−squared:  0.02422 
F−statistic: 1.163 on 12 and 67 DF,  p−value: 0.3272
```

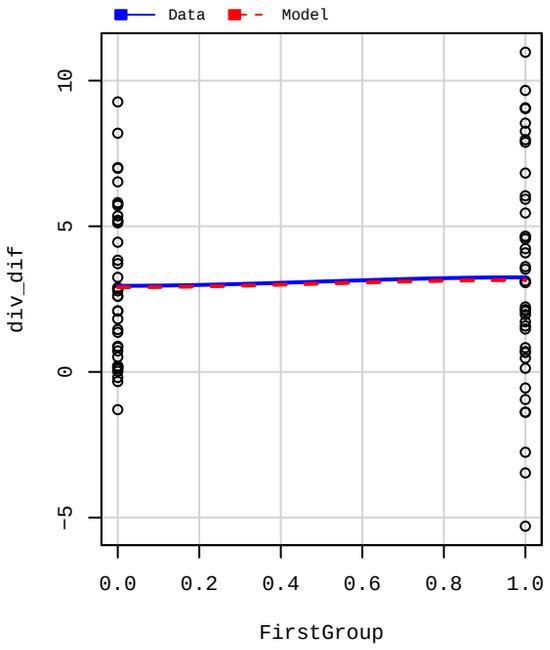
5.) SimpsonsRecip:

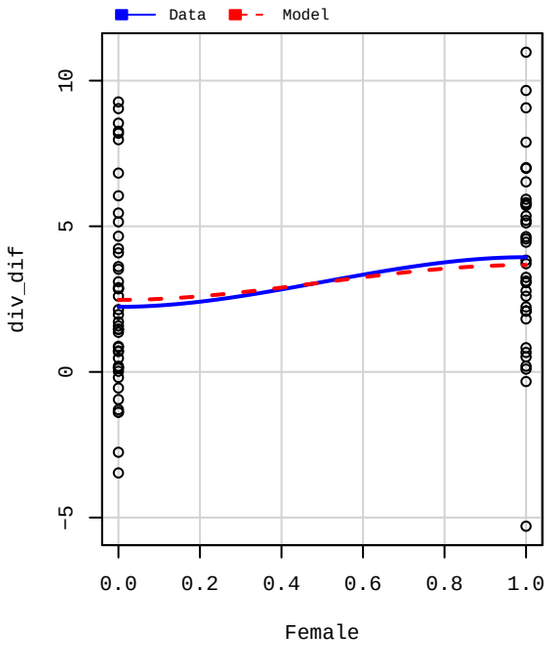
Analysis of Variance Table

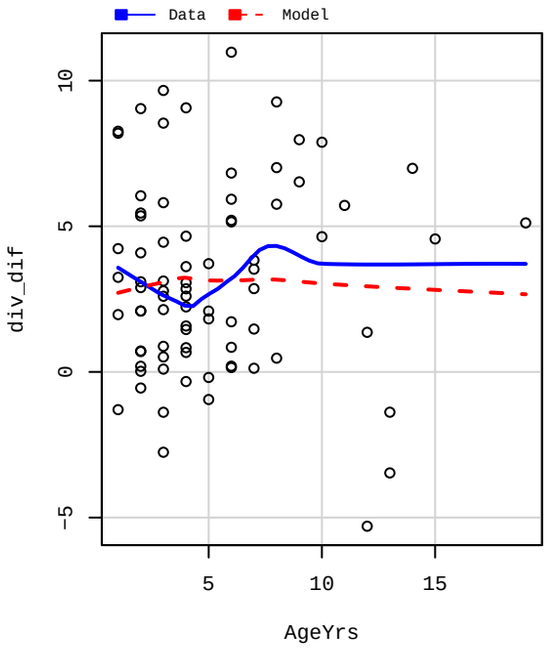
Response: div_dif

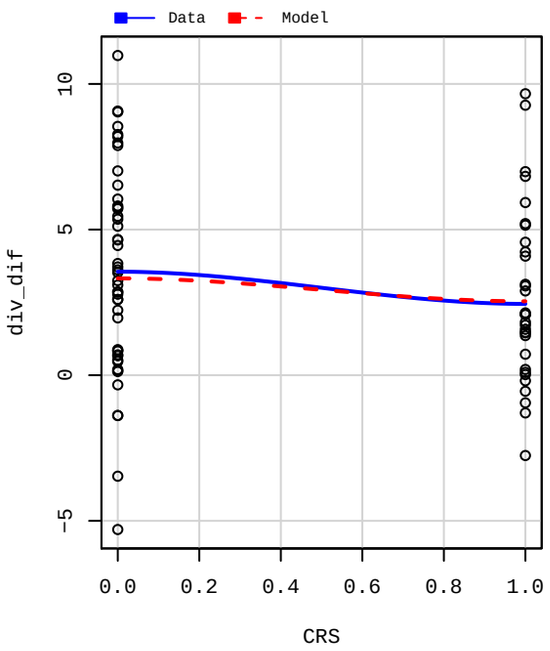
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
FirstGroup	1	1.15	1.150	0.1092	0.74206	
Female	1	39.42	39.425	3.7455	0.05717	.
AgeYrs	1	0.30	0.297	0.0282	0.86716	
CRS	1	11.84	11.835	1.1244	0.29278	
PPI	1	25.34	25.345	2.4079	0.12544	
Beta2	1	24.91	24.912	2.3667	0.12866	
Antibiotic	1	4.74	4.737	0.4501	0.50462	
InhaledSteroid	1	6.87	6.869	0.6526	0.42205	
NasalSteroid	1	9.82	9.816	0.9326	0.33766	
SystemicImmuno	1	17.51	17.511	1.6636	0.20155	
Antihistimine	1	2.75	2.751	0.2614	0.61085	
LTRA	1	2.30	2.299	0.2185	0.64174	
Residuals	67	705.23	10.526			

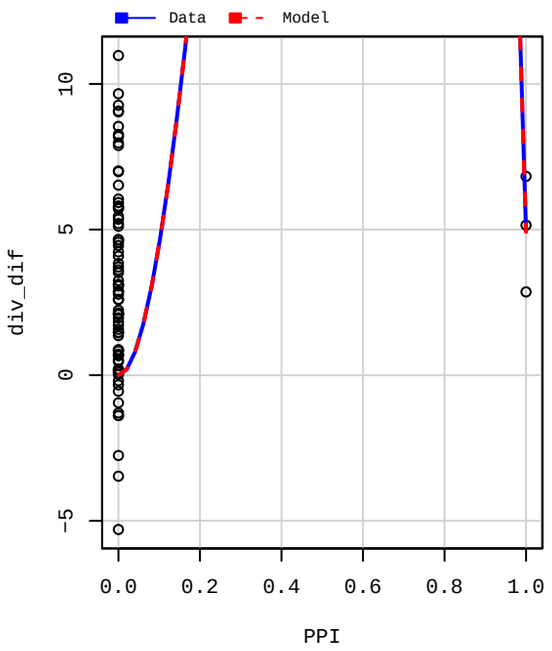
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

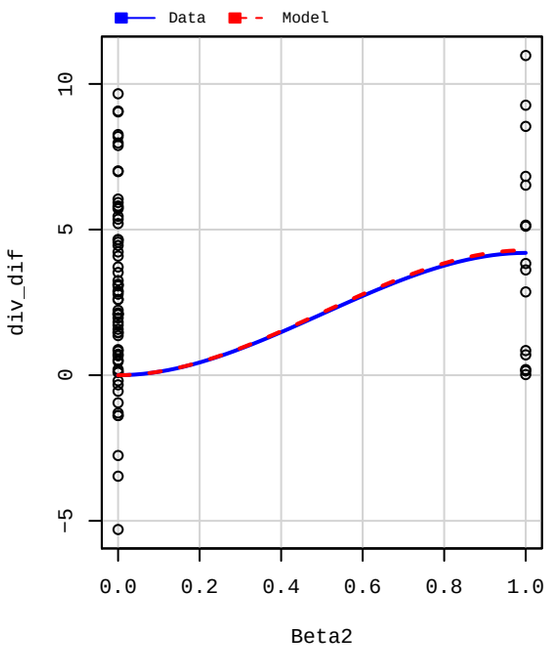

Data
Model
div_dif
FirstGroup

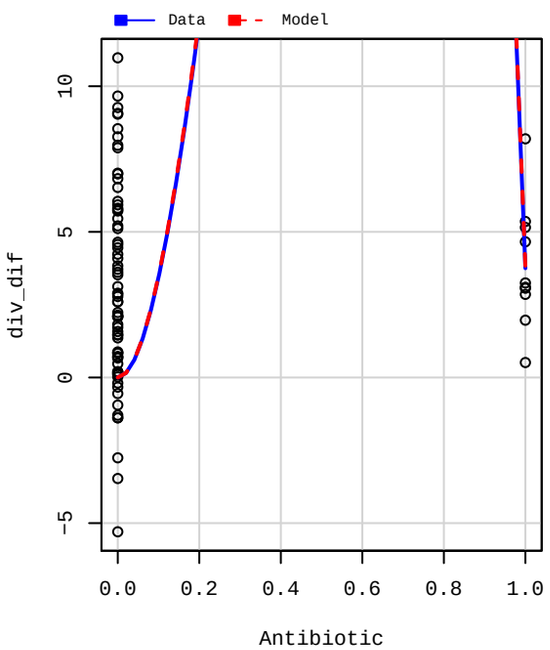

Data
Model
div_dif
Female

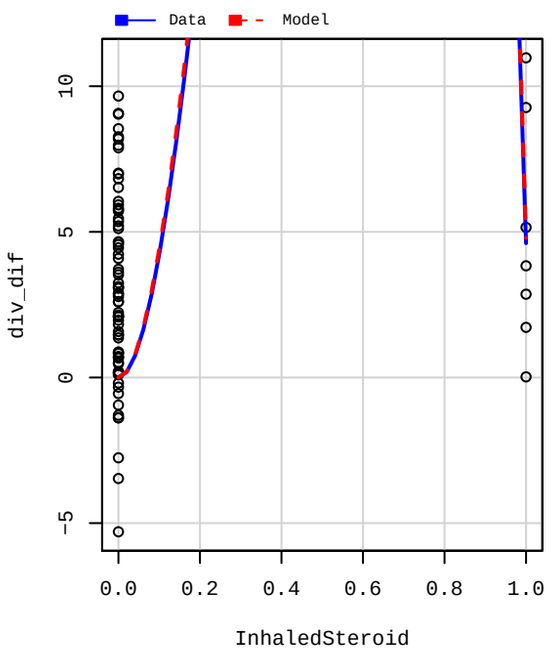

Data
Model
div_dif
AgeYrs

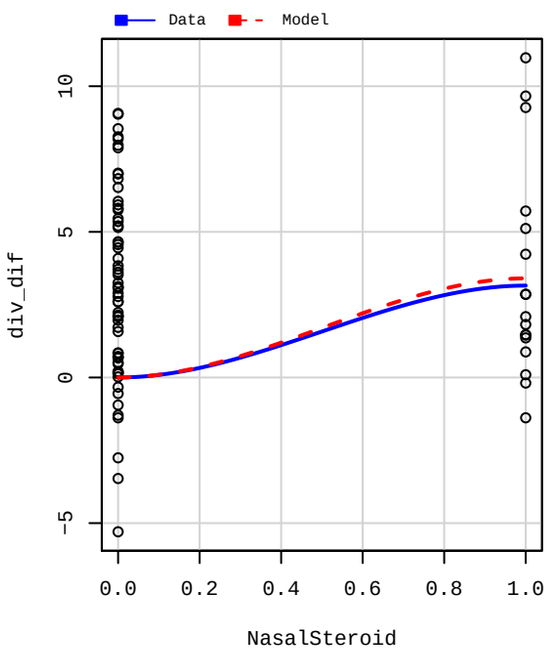

Data
Model
div_dif
CRS


Data
Model
div_dif
PPI

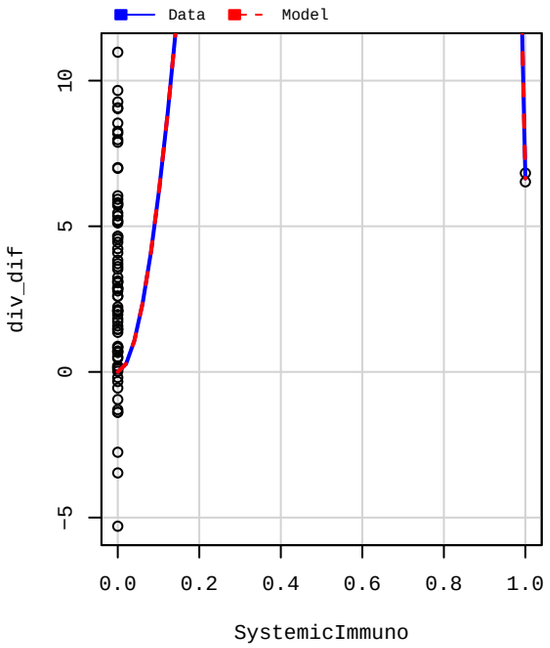

Data
Model
div_dif
Beta2

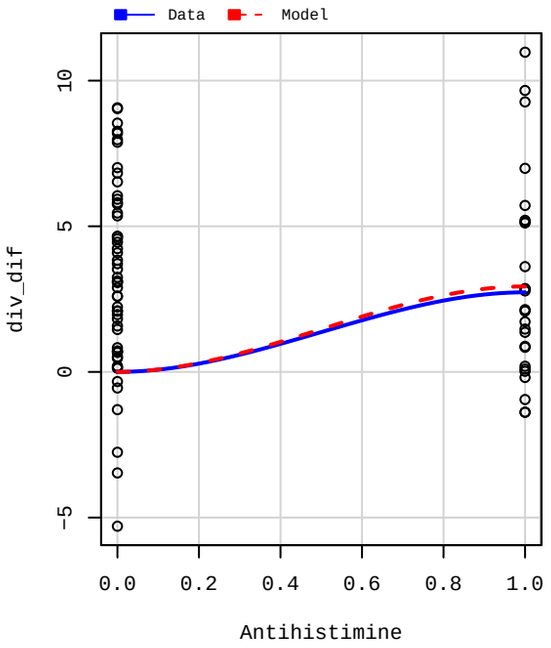

Data
Model
div_dif
Antibiotic

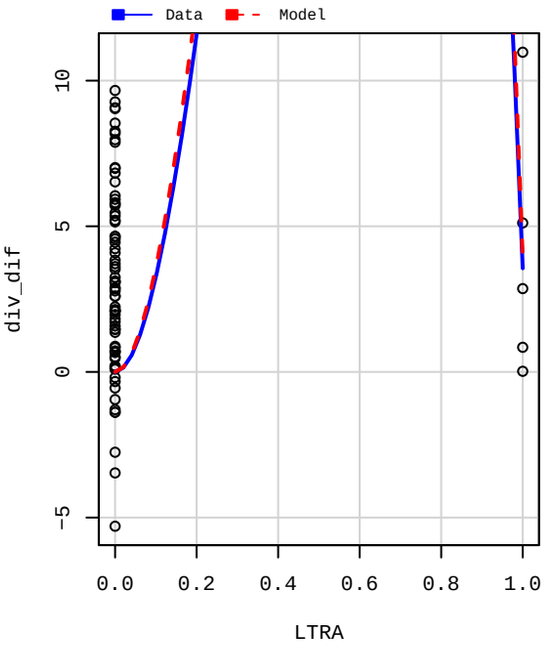

Data
Model
div_dif
InhaledSteroid

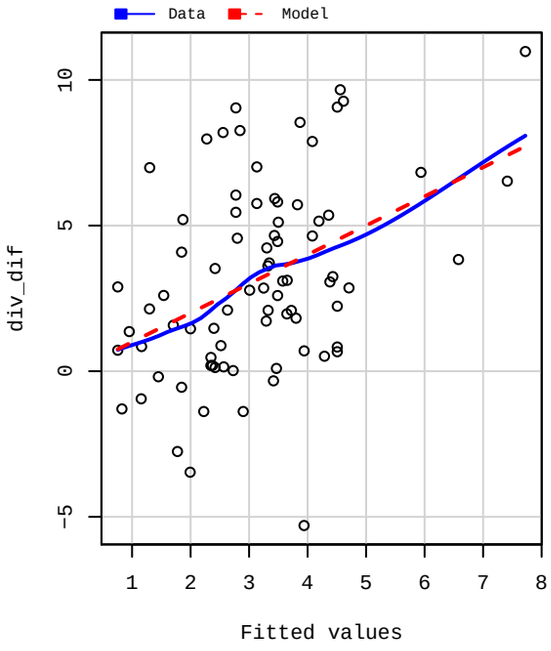

Data
Model
div_dif
NasalSteroid

Marginal Model Plots



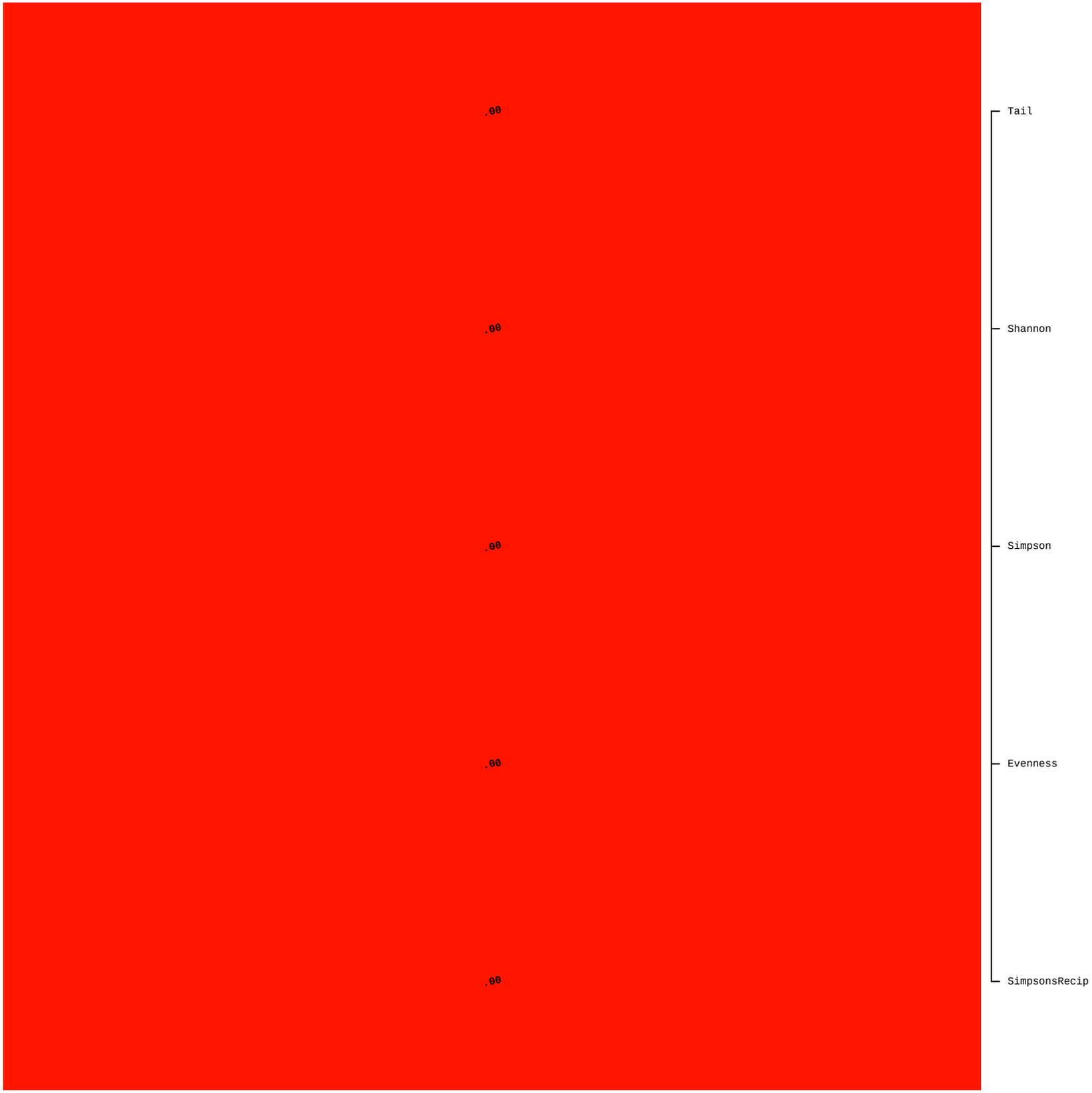




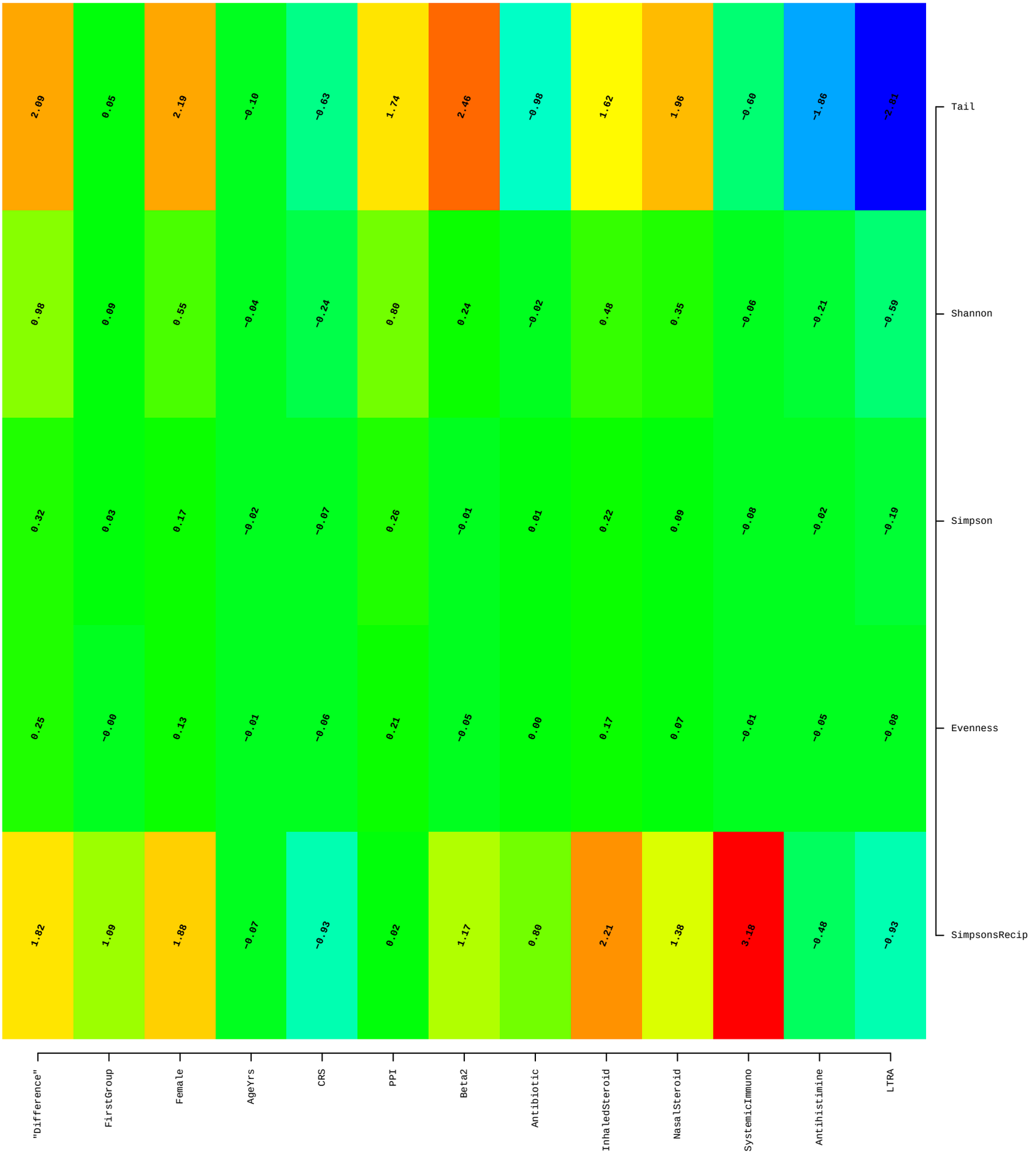


Wilcoxon Difference in ALR: P−values

(No controlling for covariates)

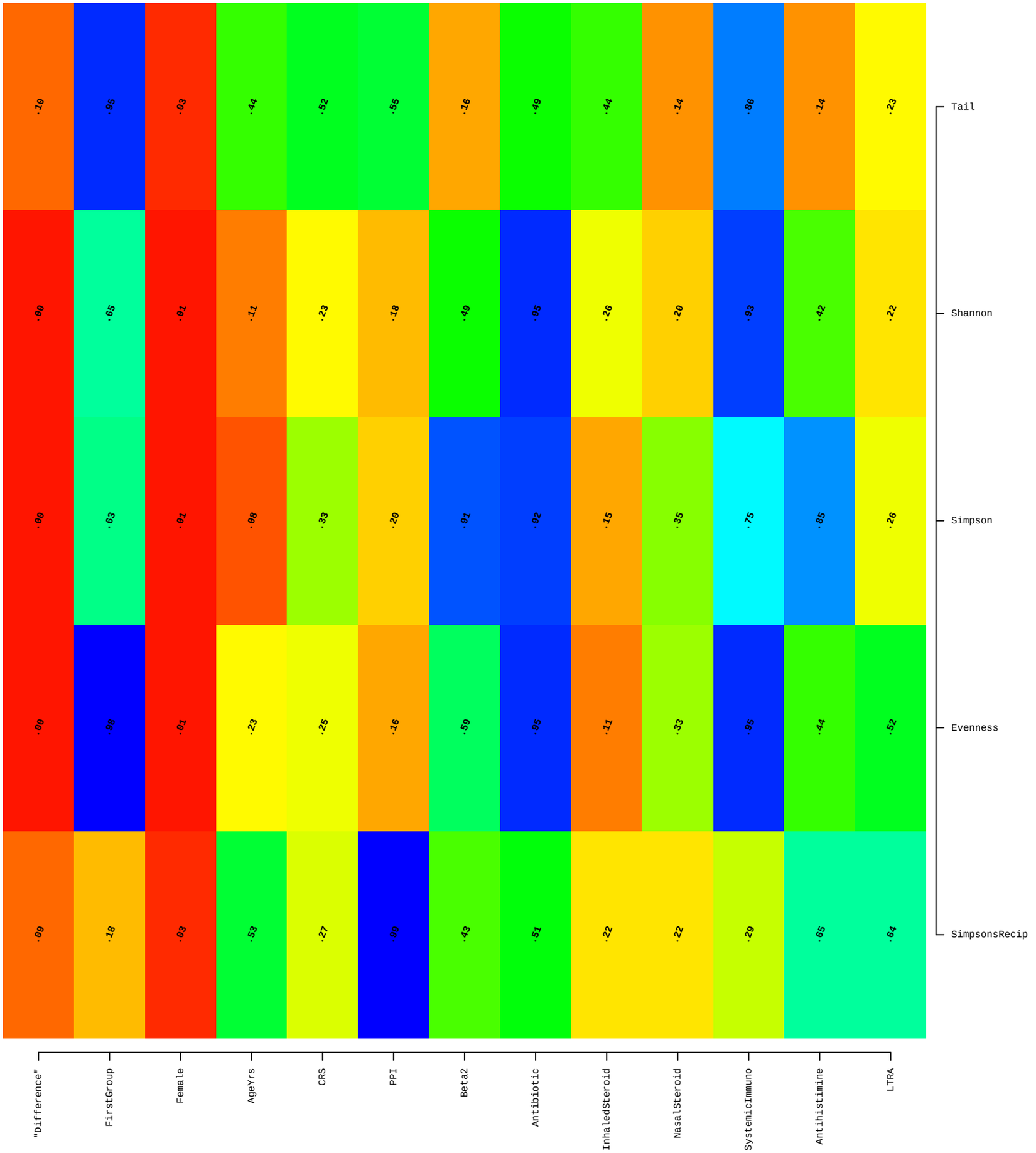


Regression Model Coefficient Values



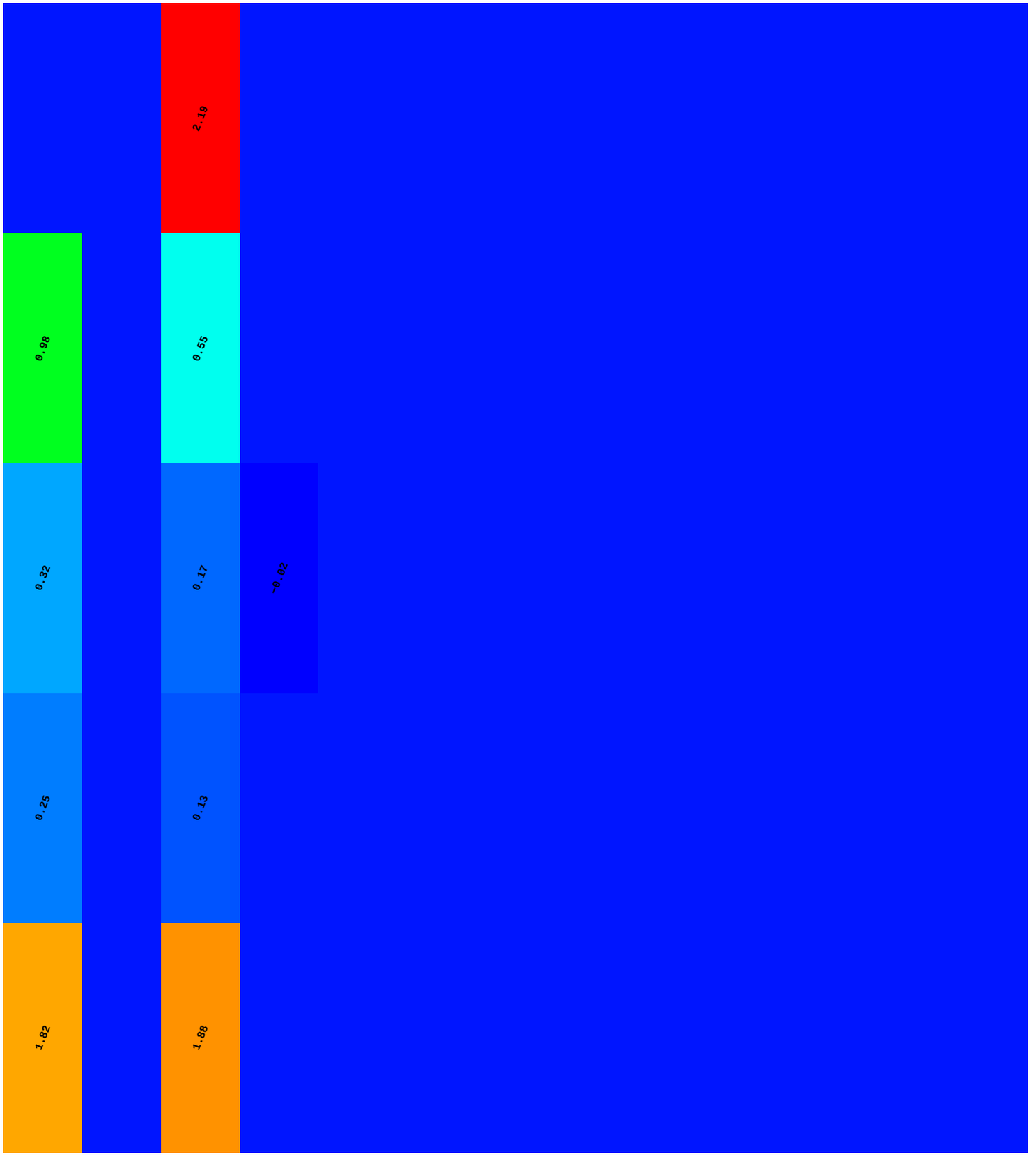
Regression Model Coeff P-Values

(H0: Coefficients equal zero, H1: Non-zero Coefficients)

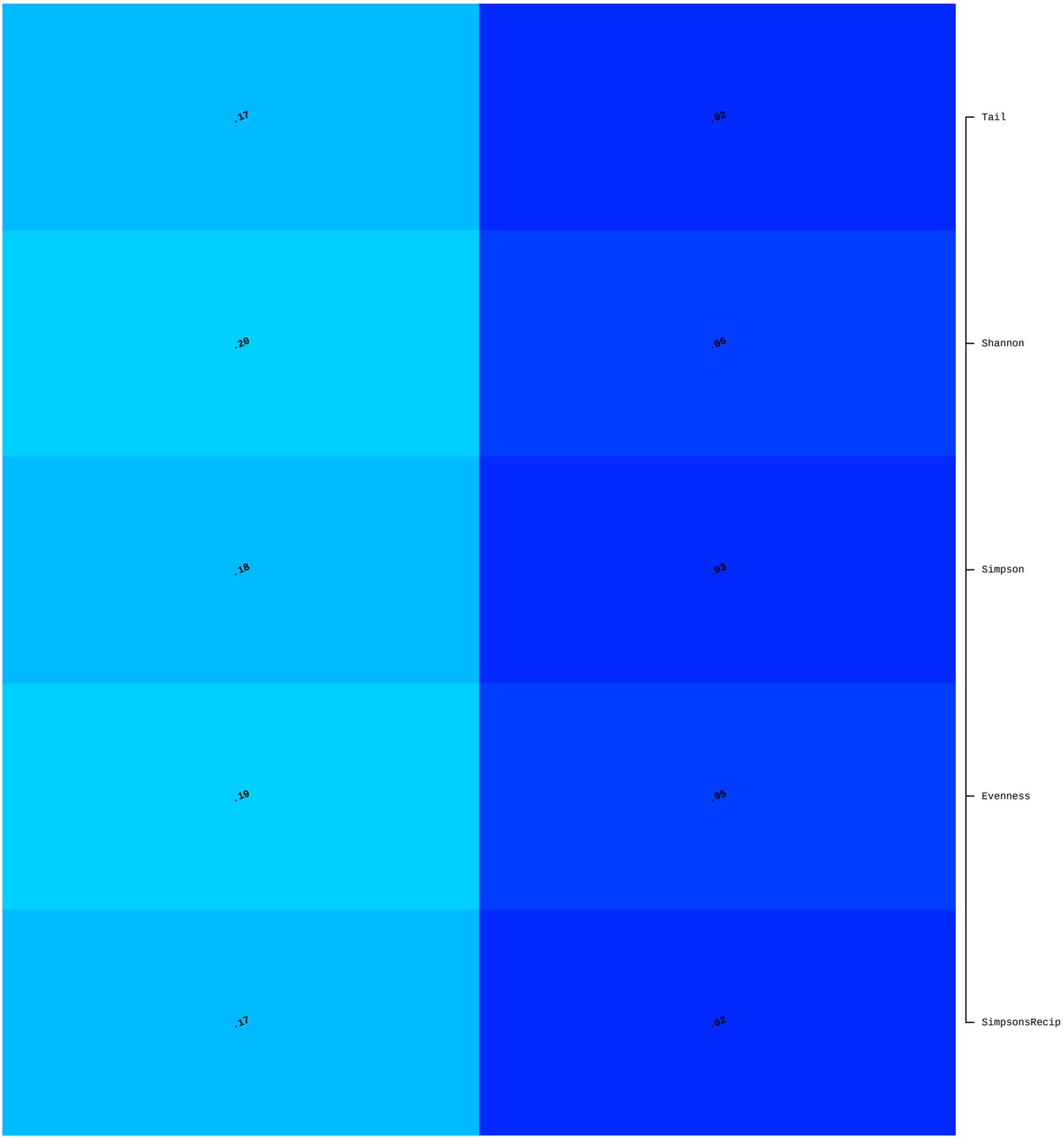


Regression Model Significant Coefficients

(P−Values < 0.10 Shown)



Regression R^2's



Regression Model Fit P-values

(H0: Predictors have no contribution to model fit)