RBD

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
region	5	region southwes southeas northwes northeas
age_category	4	age_cate 18-35 36-50 51-64

Number of Observations Read	1339
Number of Observations Used	1338

RBD

The GLM Procedure

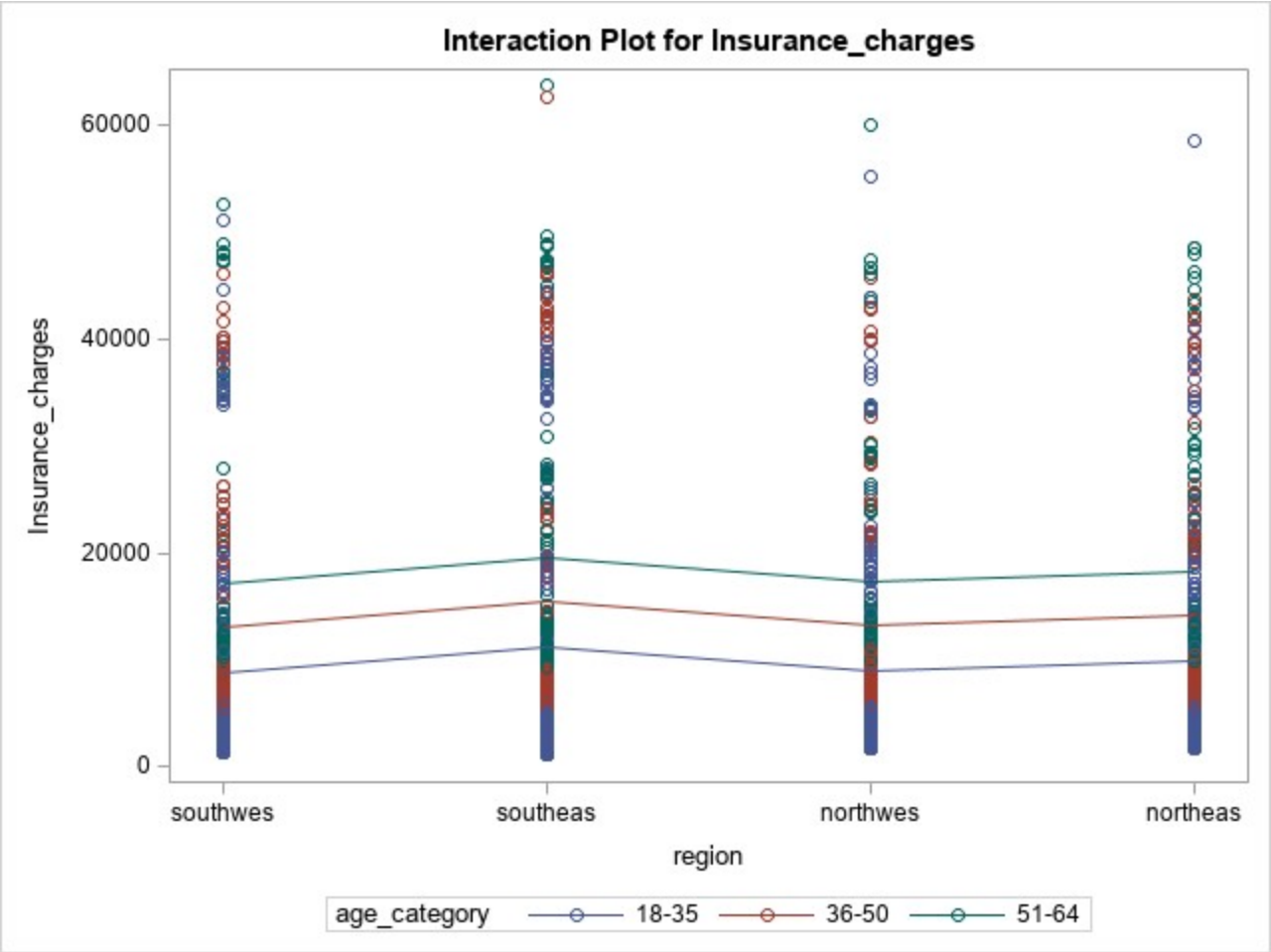
Dependent Variable: Insurance_charges

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	16994341205	3398868240.9	25.28	<.0001
Error	1332	179079933652	134444394.63		
Corrected Total	1337	196074274857			

R-Square	Coeff Var	Root MSE	Insurance_charges Mean
0.086673	87.37493	11595.02	13270.41

Source	DF	Type I SS	Mean Square	F Value	Pr > F
region	3	1300763878	433587959	3.23	0.0219
age_category	2	15693577327	7846788664	58.36	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
region	3	1370634047	456878016	3.40	0.0173
age_category	2	15693577327	7846788664	58.36	<.0001


Interaction Plot for Insurance_charges
Insurance_charges
60000
40000
20000
0
southwes
southeas
northwes
northeas
region
age_category
18-35
36-50
51-64

RBD

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
region	4	southwes southeas northwes northeas
age_category	3	18-35 36-50 51-64

Number of Observations Read	1339
Number of Observations Used	1338

RBD

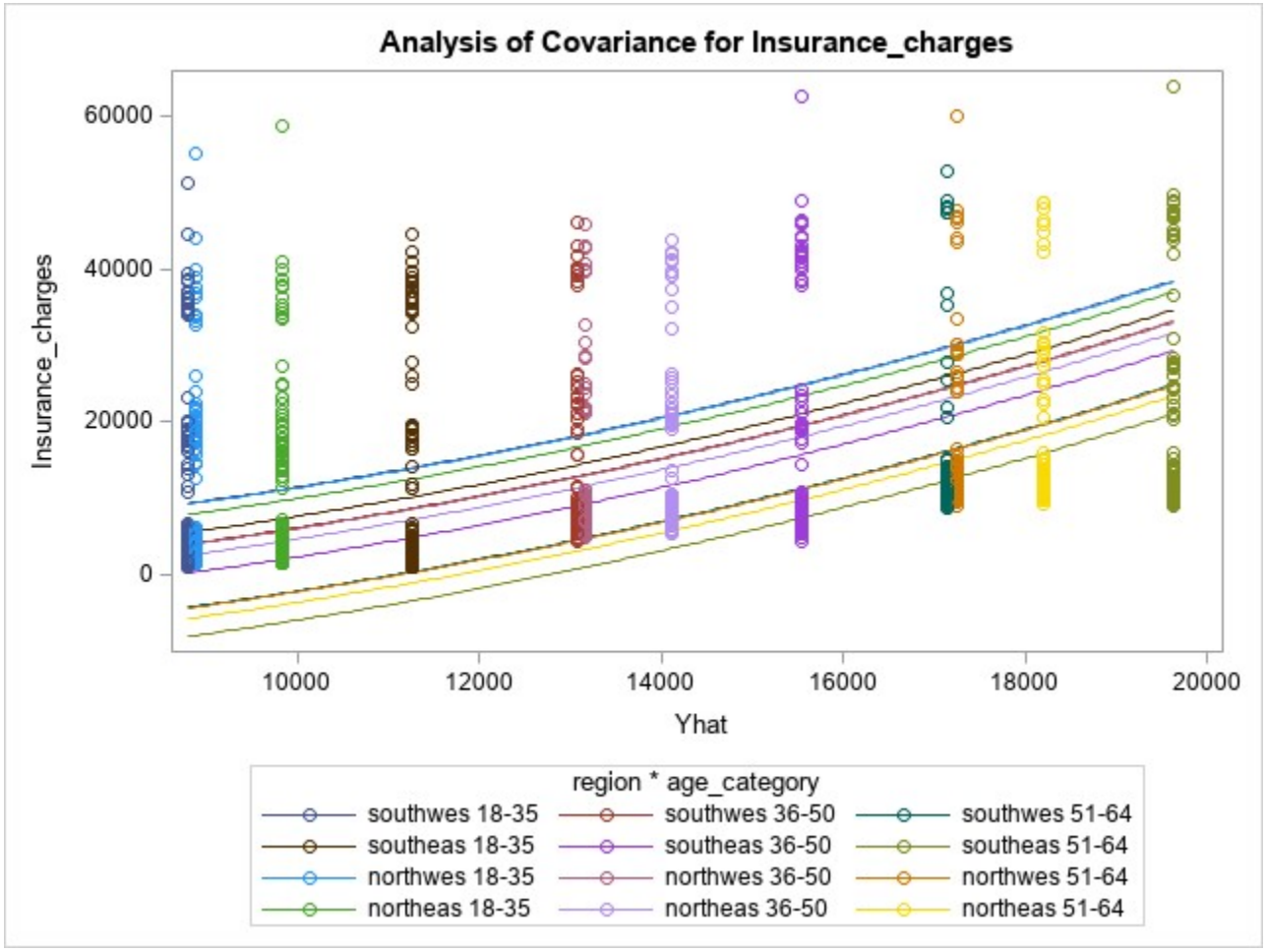
The GLM Procedure

Dependent Variable: Insurance_charges

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	17562598419	2927099736.5	21.82	<.0001
Error	1331	178511676438	134118464.64		
Corrected Total	1337	196074274857			

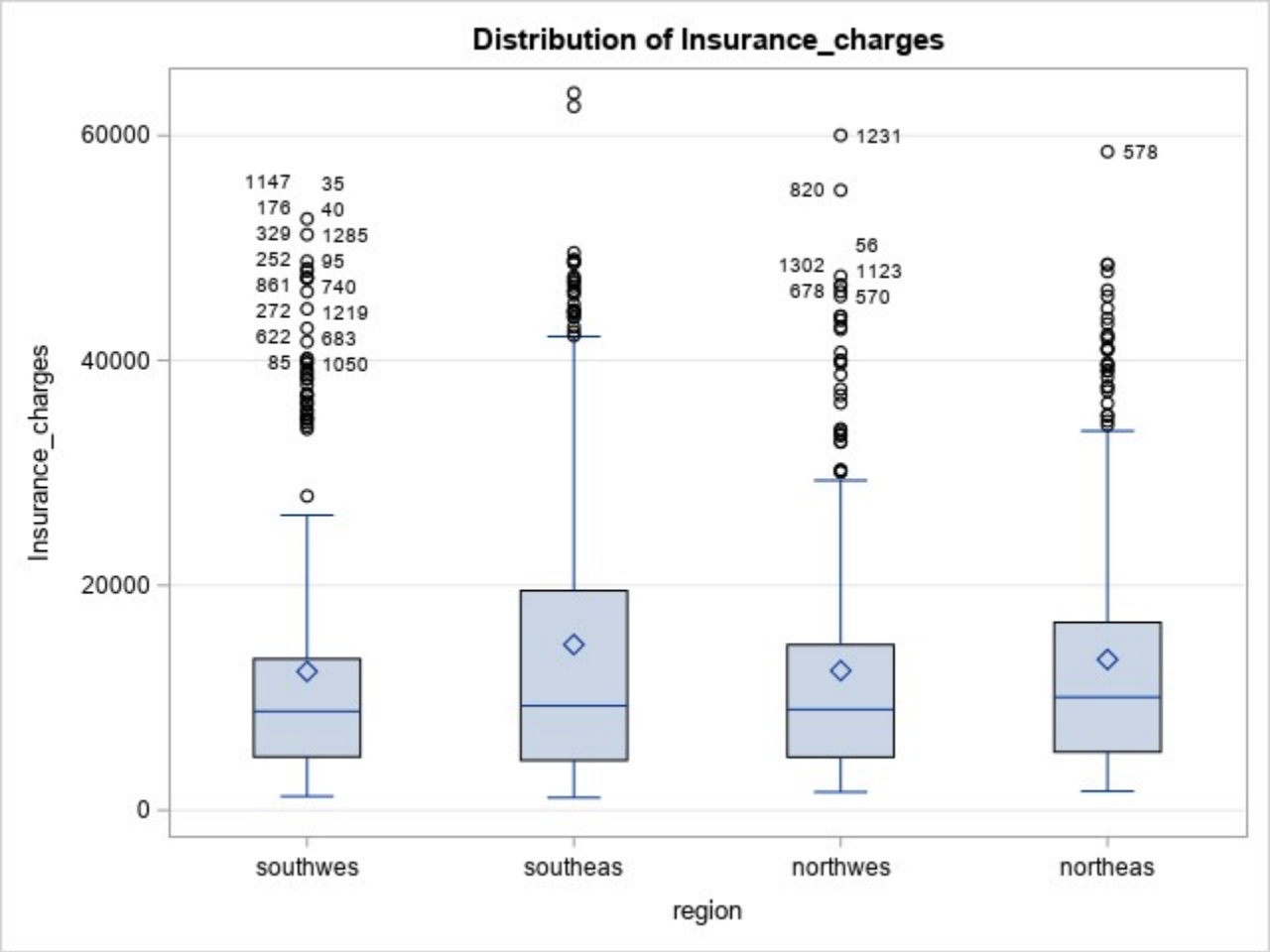
R-Square	Coeff Var	Root MSE	Insurance_charges Mean
0.089571	87.26896	11580.95	13270.41

Source	DF	Type I SS	Mean Square	F Value	Pr > F
region	3	1300763878	433587959	3.23	0.0216
age_category	2	15693577327	7846788664	58.51	<.0001
Yhat*Yhat	1	568257214	568257214	4.24	0.0397



RBD

The GLM Procedure



RBD

The GLM Procedure

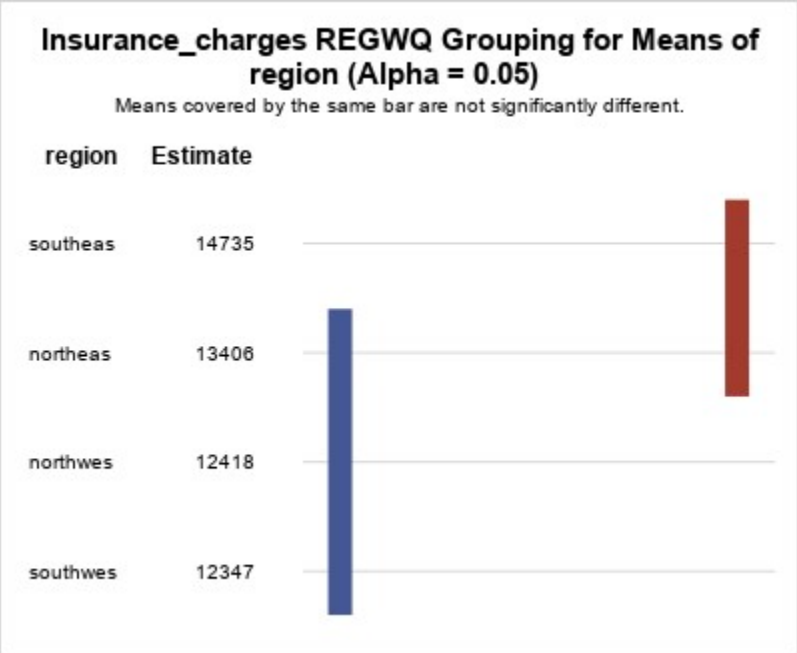
Ryan-Einot-Gabriel-Welsch Multiple Range Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Harmonic Mean of Cell Sizes	333.6804

Note: Cell sizes are not equal.

Number of Means	**2**	**3**	**4**
Critical Range	2007.3679	2103.697	2306.2504



RBD

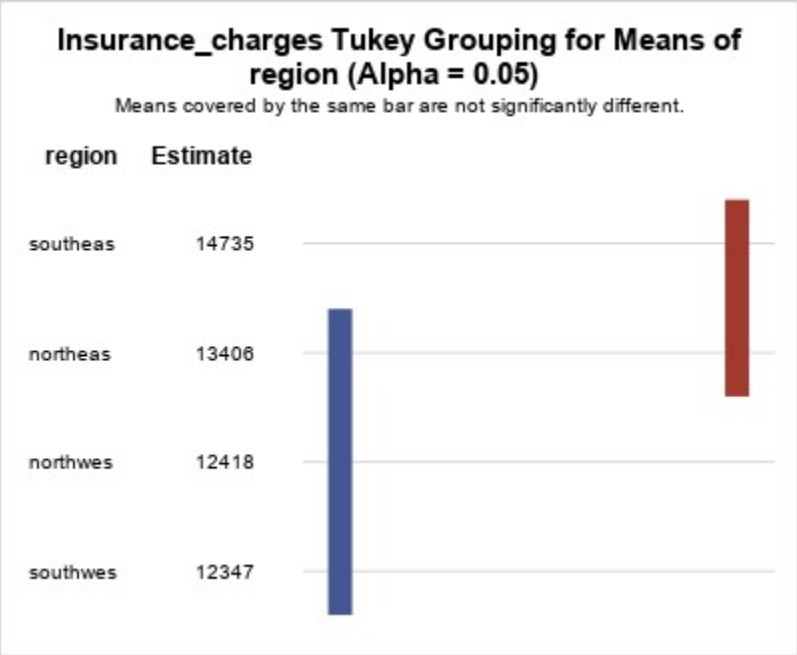
The GLM Procedure

Tukey's Studentized Range (HSD) Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of Studentized Range	3.63771
Minimum Significant Difference	2306.3
Harmonic Mean of Cell Sizes	333.6804

Note: Cell sizes are not equal.



RBD

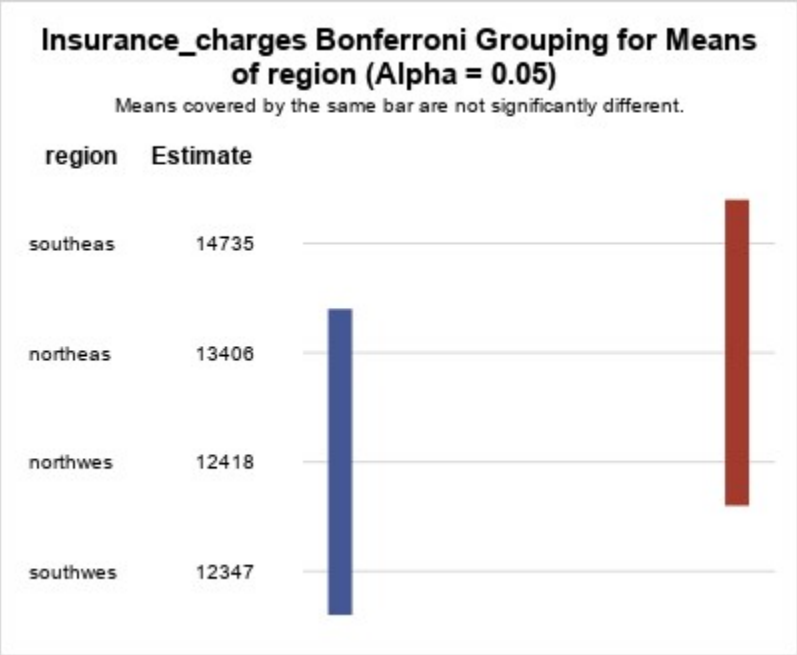
The GLM Procedure

Bonferroni (Dunn) t Tests for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of t	2.64221
Minimum Significant Difference	2369
Harmonic Mean of Cell Sizes	333.6804

Note: Cell sizes are not equal.



RBD

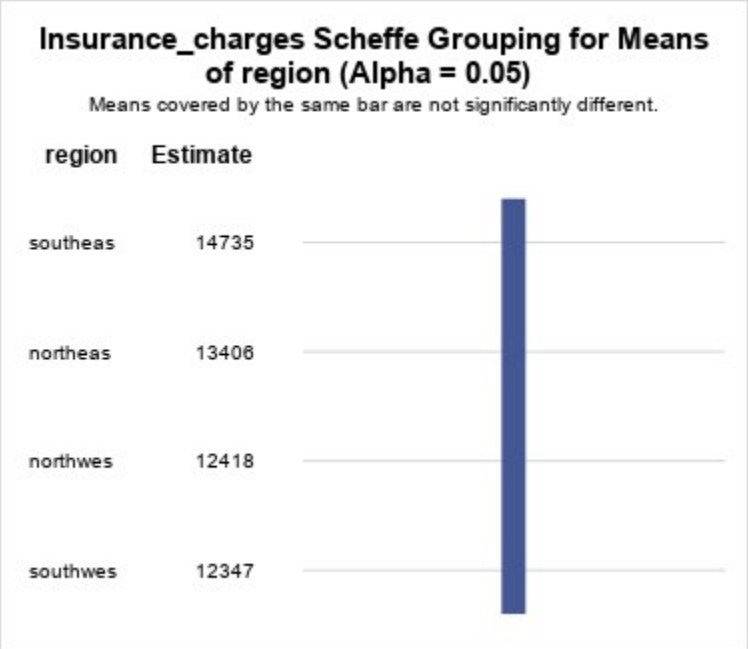
The GLM Procedure

Scheffe's Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

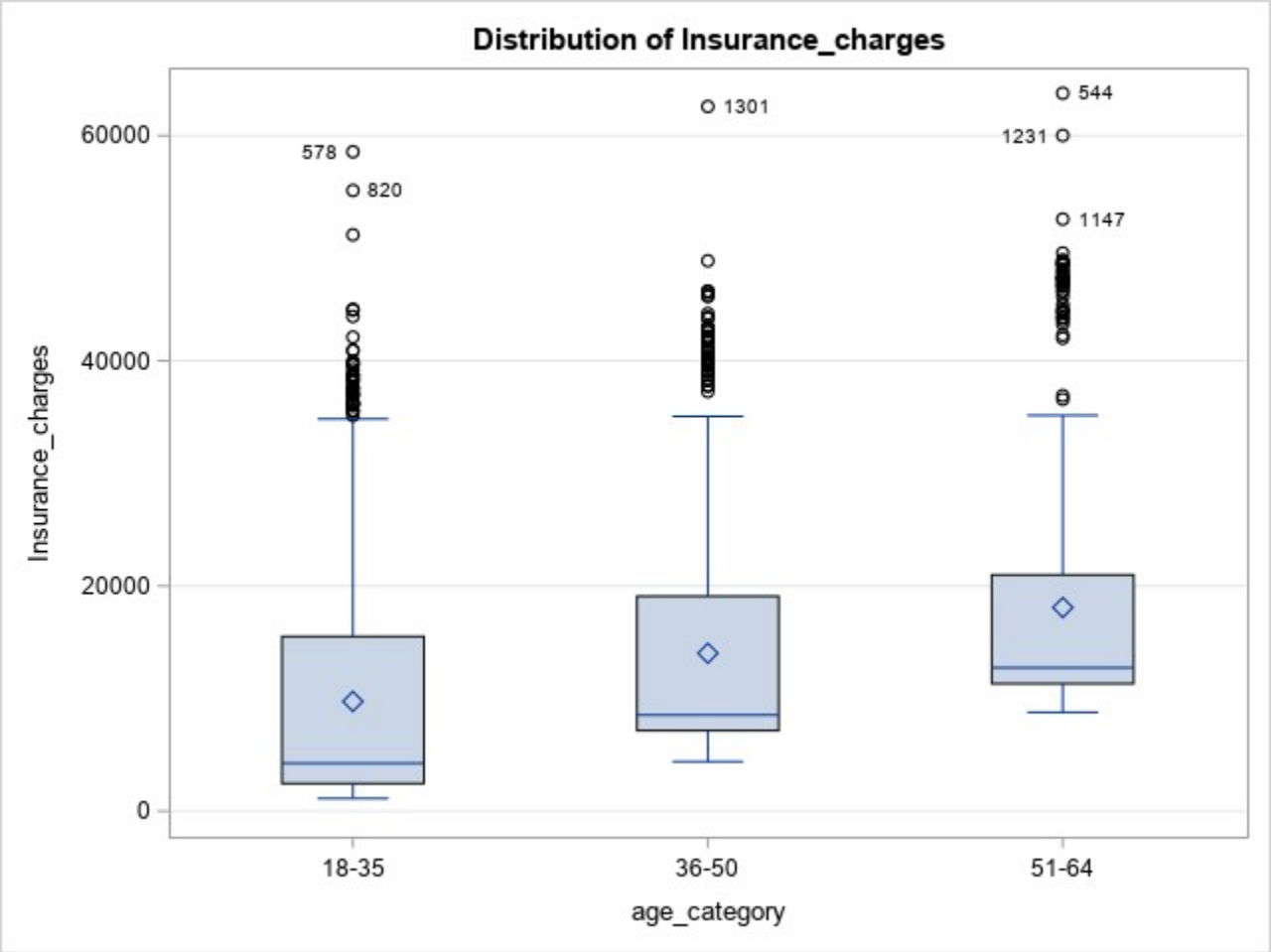
Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of F	2.61159
Minimum Significant Difference	2509.6
Harmonic Mean of Cell Sizes	333.6804

Note: Cell sizes are not equal.



RBD

The GLM Procedure



RBD

The GLM Procedure

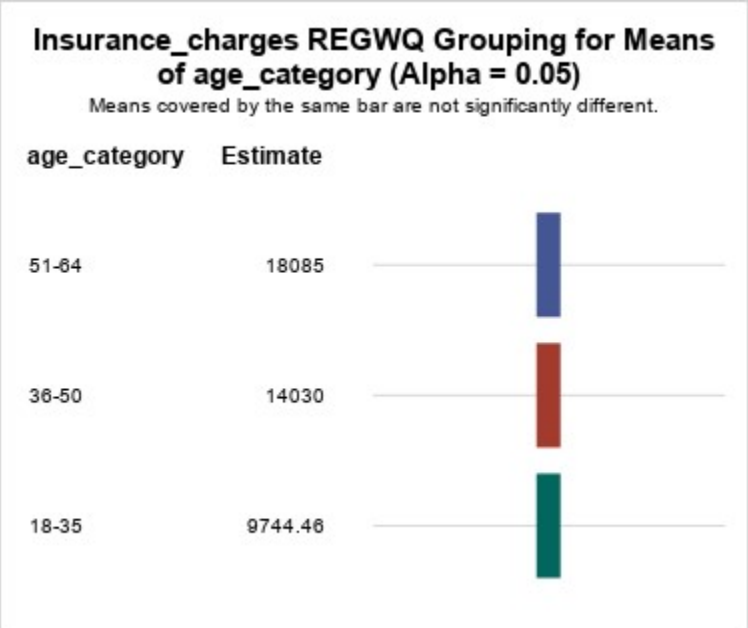
Ryan-Einot-Gabriel-Welsch Multiple Range Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.

Number of Means	**2**	**3**
Critical Range	1552.2332	1856.5343



RBD

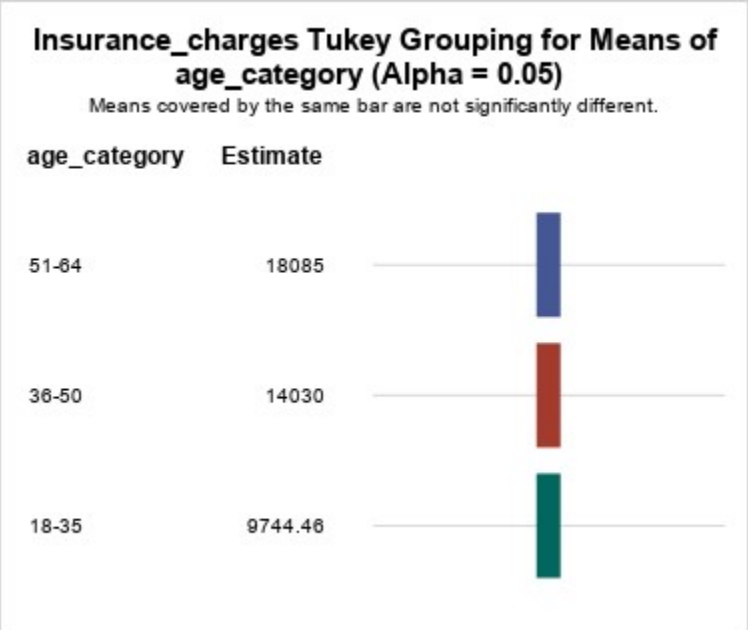
The GLM Procedure

Tukey's Studentized Range (HSD) Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of Studentized Range	3.31821
Minimum Significant Difference	1856.5
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



RBD

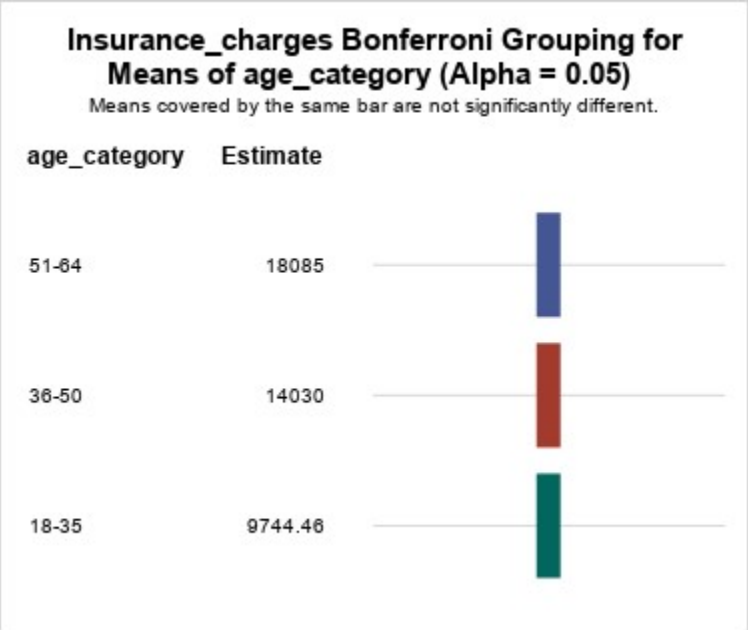
The GLM Procedure

Bonferroni (Dunn) t Tests for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of t	2.39701
Minimum Significant Difference	1896.6
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



RBD

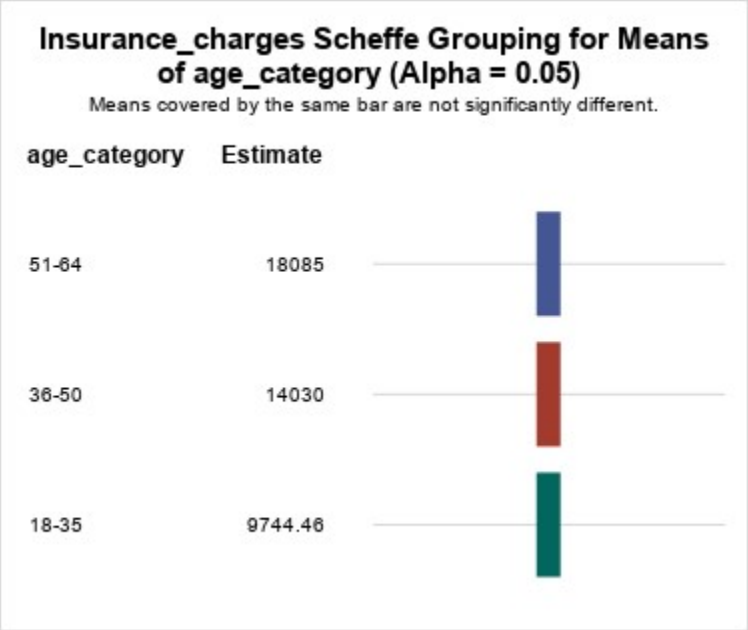
The GLM Procedure

Scheffe's Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1331
Error Mean Square	1.3412E8
Critical Value of F	3.00249
Minimum Significant Difference	1939
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



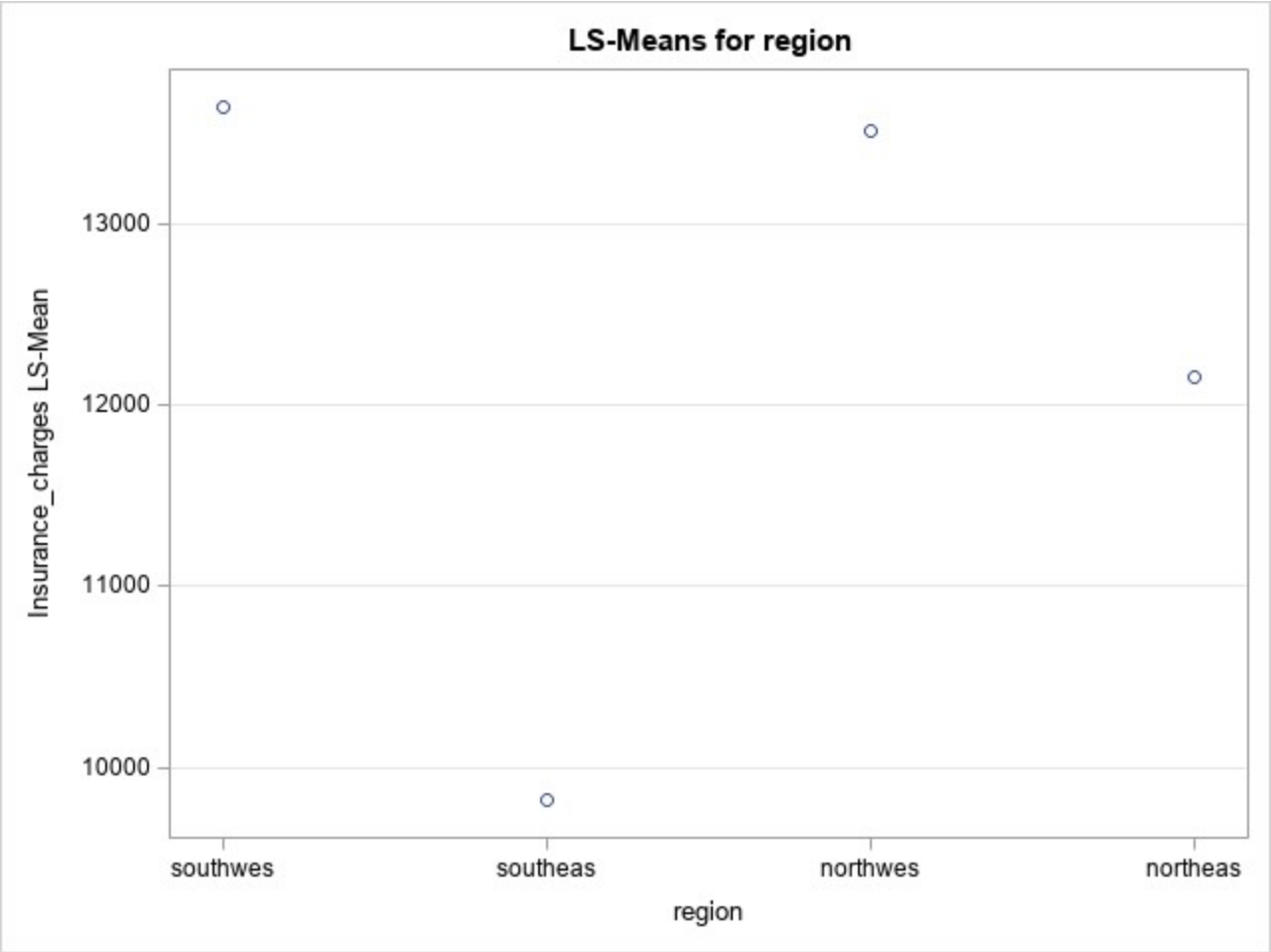
RBD

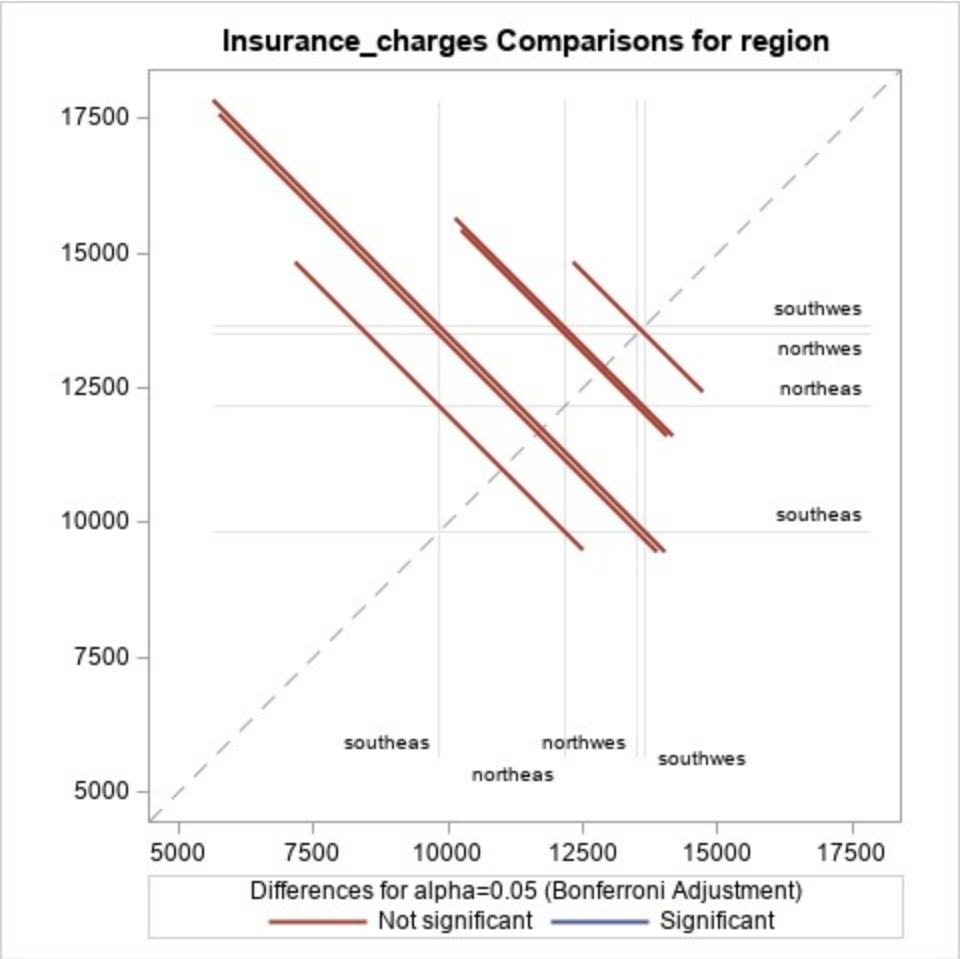
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Bonferroni

region	Insurance_charges LSMEAN	LSMEAN Number
southwes	13641.3466	1
southeas	9820.6021	2
northwes	13508.6189	3
northeas	12148.7254	4

Least Squares Means for effect region
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4
1		1.0000	1.0000	1.0000
2	1.0000		1.0000	1.0000
3	1.0000	1.0000		1.0000
4	1.0000	1.0000	1.0000	


LS-Means for region
Insurance_charges LS-Mean
13000
12000
11000
10000
southwes
southeas
northwes
northeas
region


Insurance_charges Comparisons for region
17500
15000
12500
10000
7500
5000
southwes
northwes
northeas
southeas
southeas
northwes
northeas
southwes
5000
7500
10000
12500
15000
17500
Differences for alpha=0.05 (Bonferroni Adjustment)
Not significant
Significant

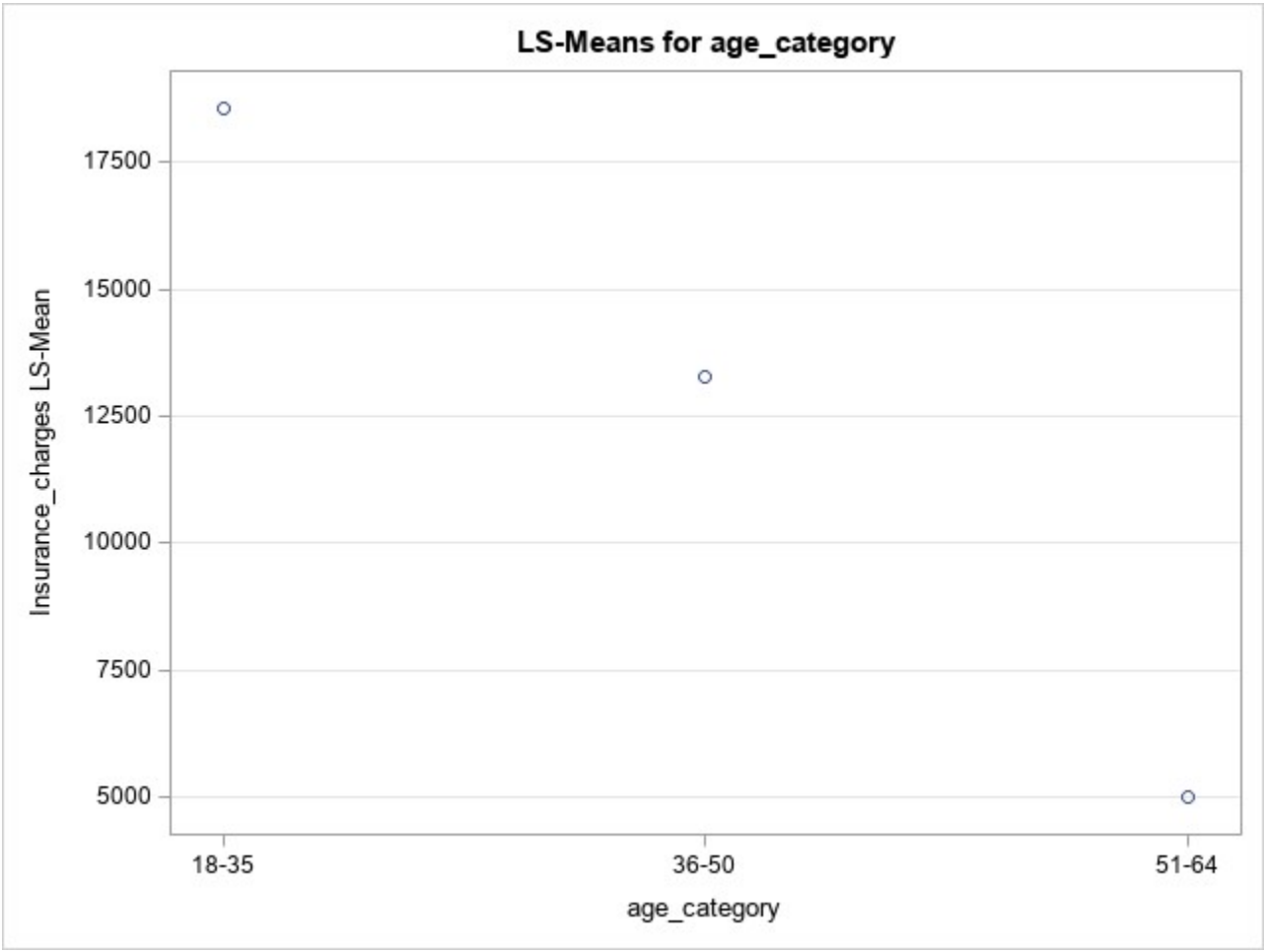
RBD

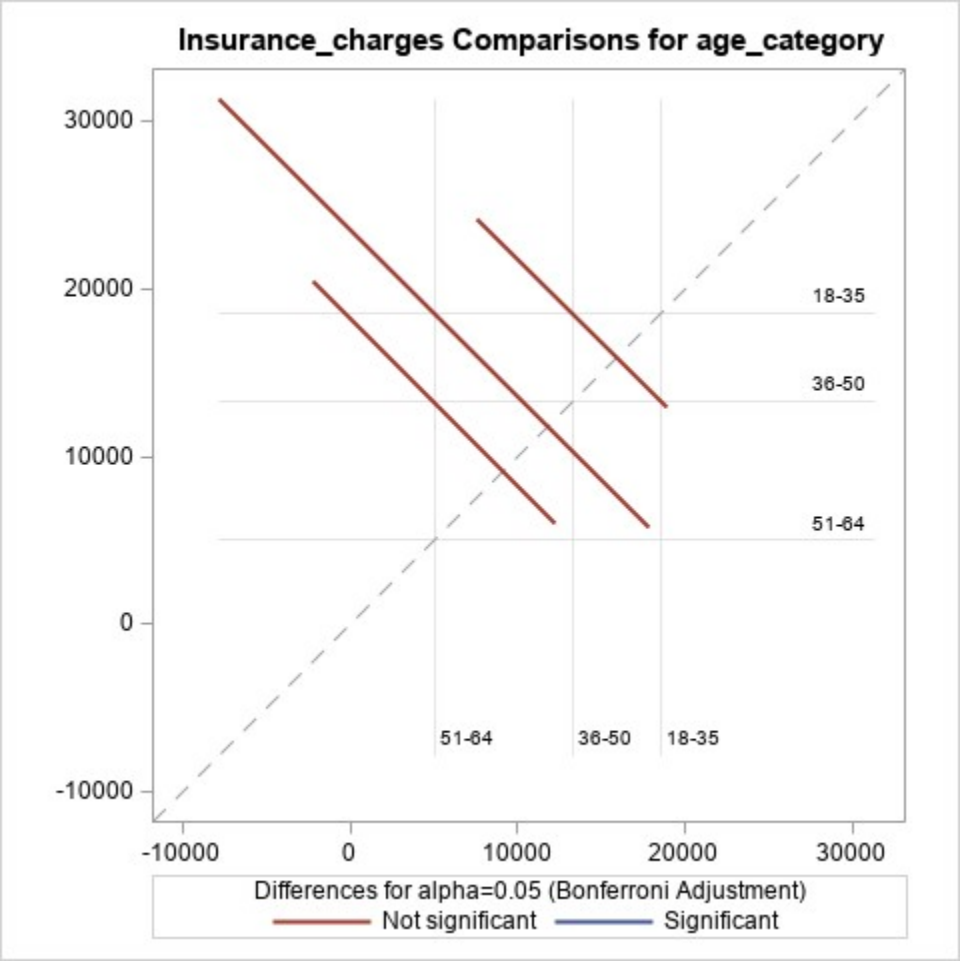
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Bonferroni

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	18564.8487	1
36-50	13261.6394	2
51-64	5012.9817	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		0.7830	0.6134
2	0.7830		0.5187
3	0.6134	0.5187	




Insurance_charges Comparisons for age_category
30000
20000
10000
0
-10000
18-35
36-50
51-64
51-64
36-50
18-35
-10000
0
10000
20000
30000
Differences for alpha=0.05 (Bonferroni Adjustment)
Not significant
Significant

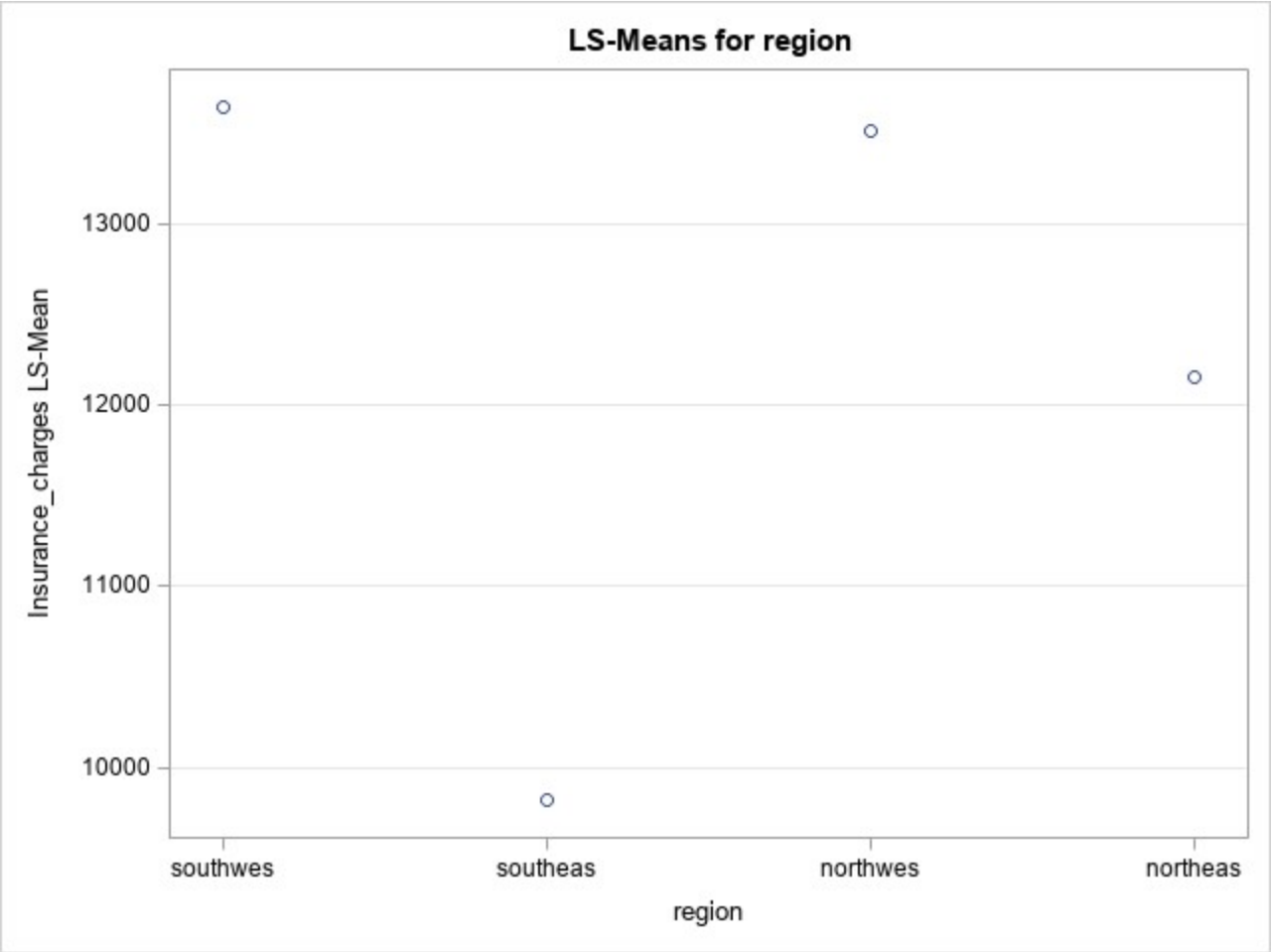
RBD

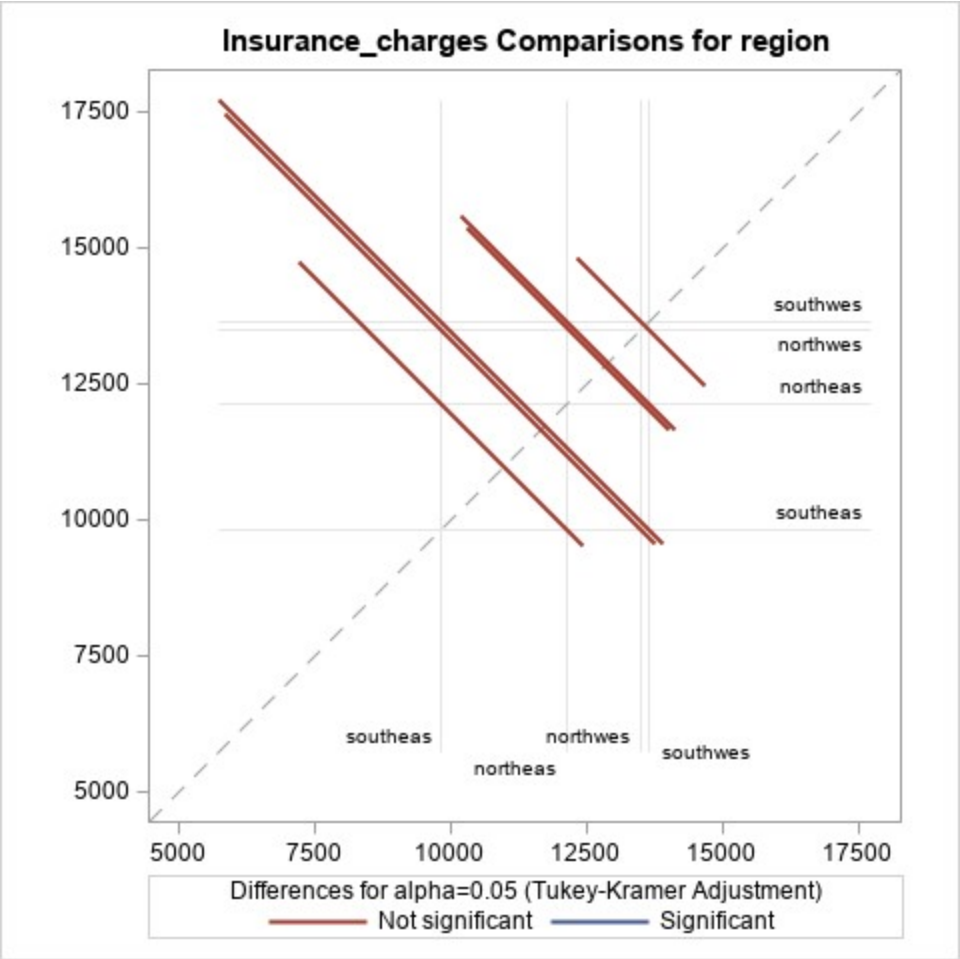
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

region	Insurance_charges LSMEAN	LSMEAN Number
southwes	13641.3466	1
southeas	9820.6021	2
northwes	13508.6189	3
northeas	12148.7254	4

Least Squares Means for effect region
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4
1		0.6260	0.9989	0.7645
2	0.6260		0.6269	0.6583
3	0.9989	0.6269		0.7826
4	0.7645	0.6583	0.7826	


LS-Means for region
Insurance_charges LS-Mean
13000
12000
11000
10000
southwes
southeas
northwes
northeas
region


Insurance_charges Comparisons for region
17500
15000
12500
10000
7500
5000
southwes
northwes
northeas
southeas
southeas
northwes
southwes
northeas
5000
7500
10000
12500
15000
17500
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

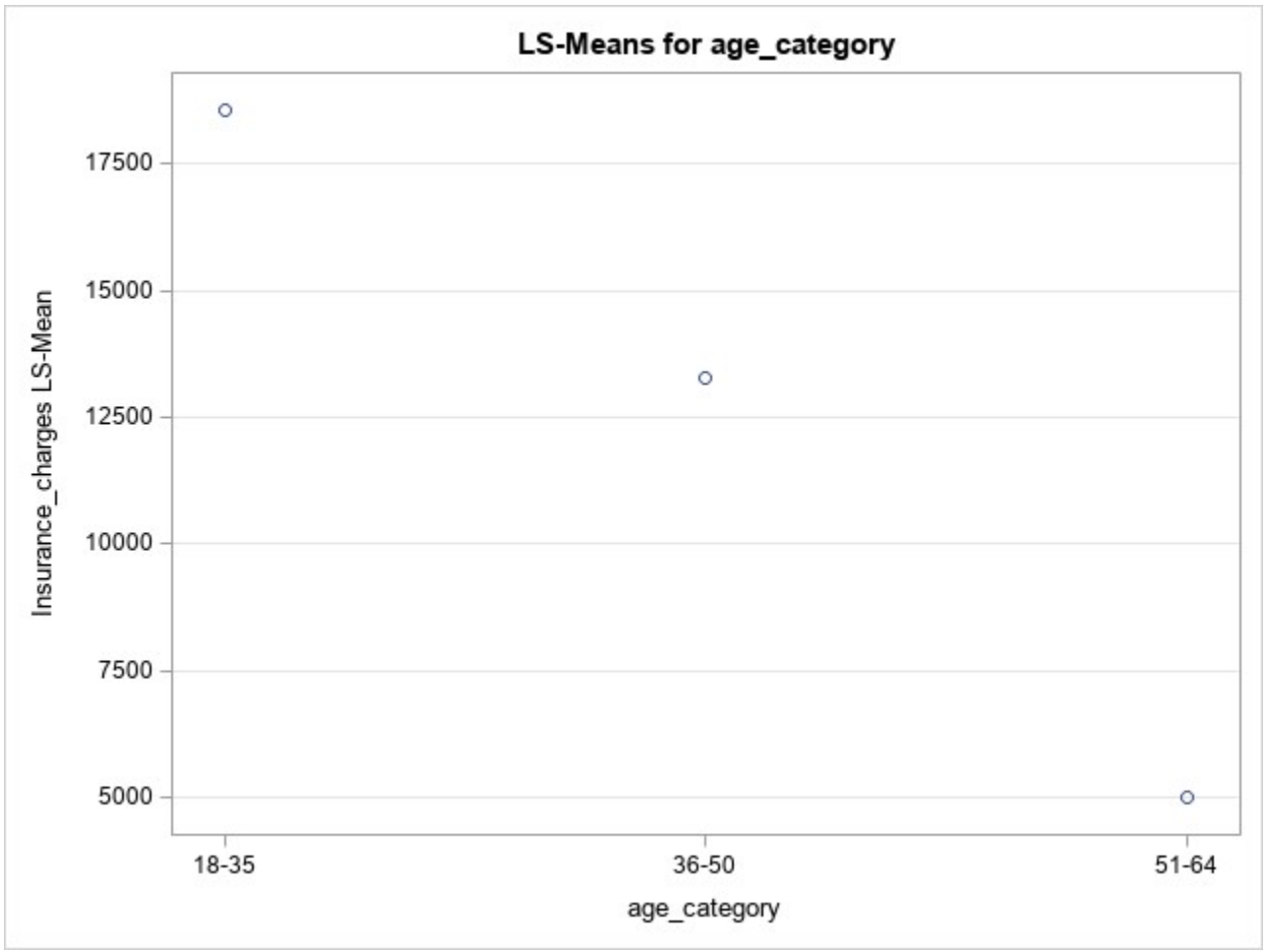
RBD

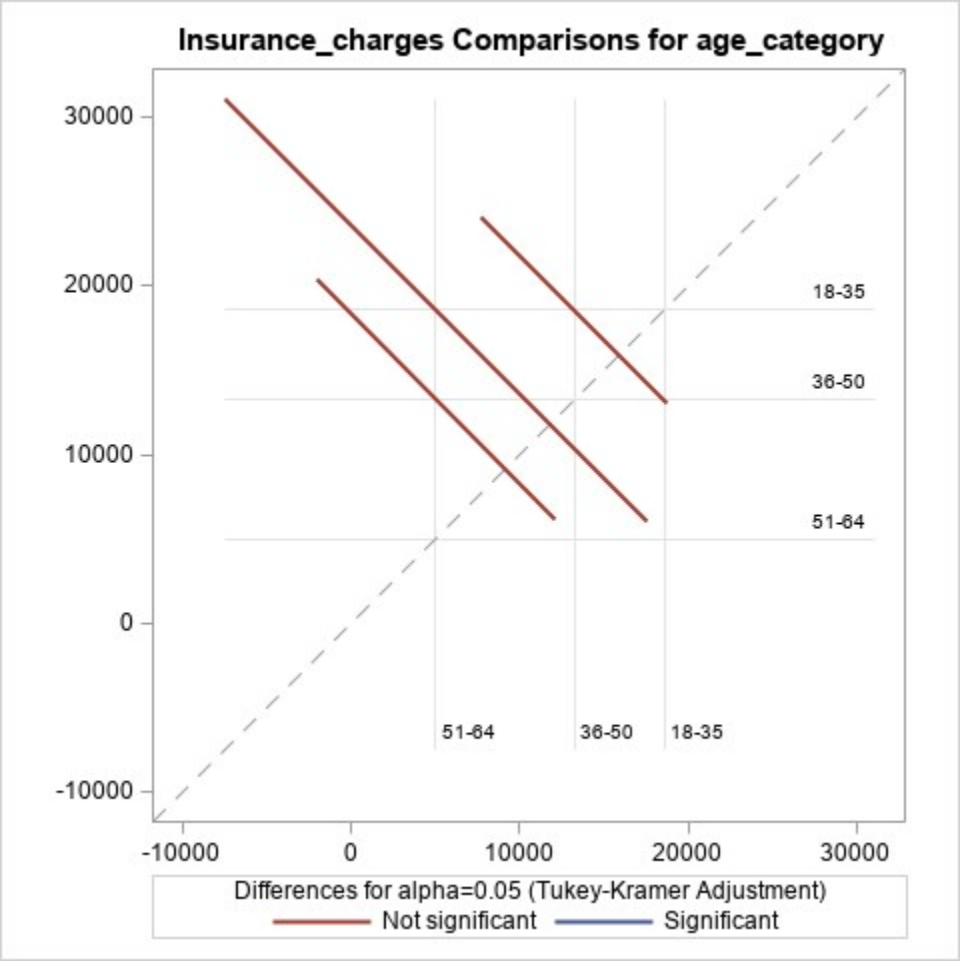
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	18564.8487	1
36-50	13261.6394	2
51-64	5012.9817	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		0.4991	0.4127
2	0.4991		0.3604
3	0.4127	0.3604	




Insurance_charges Comparisons for age_category
30000
20000
10000
0
-10000
18-35
36-50
51-64
51-64
36-50
18-35
-10000
0
10000
20000
30000
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

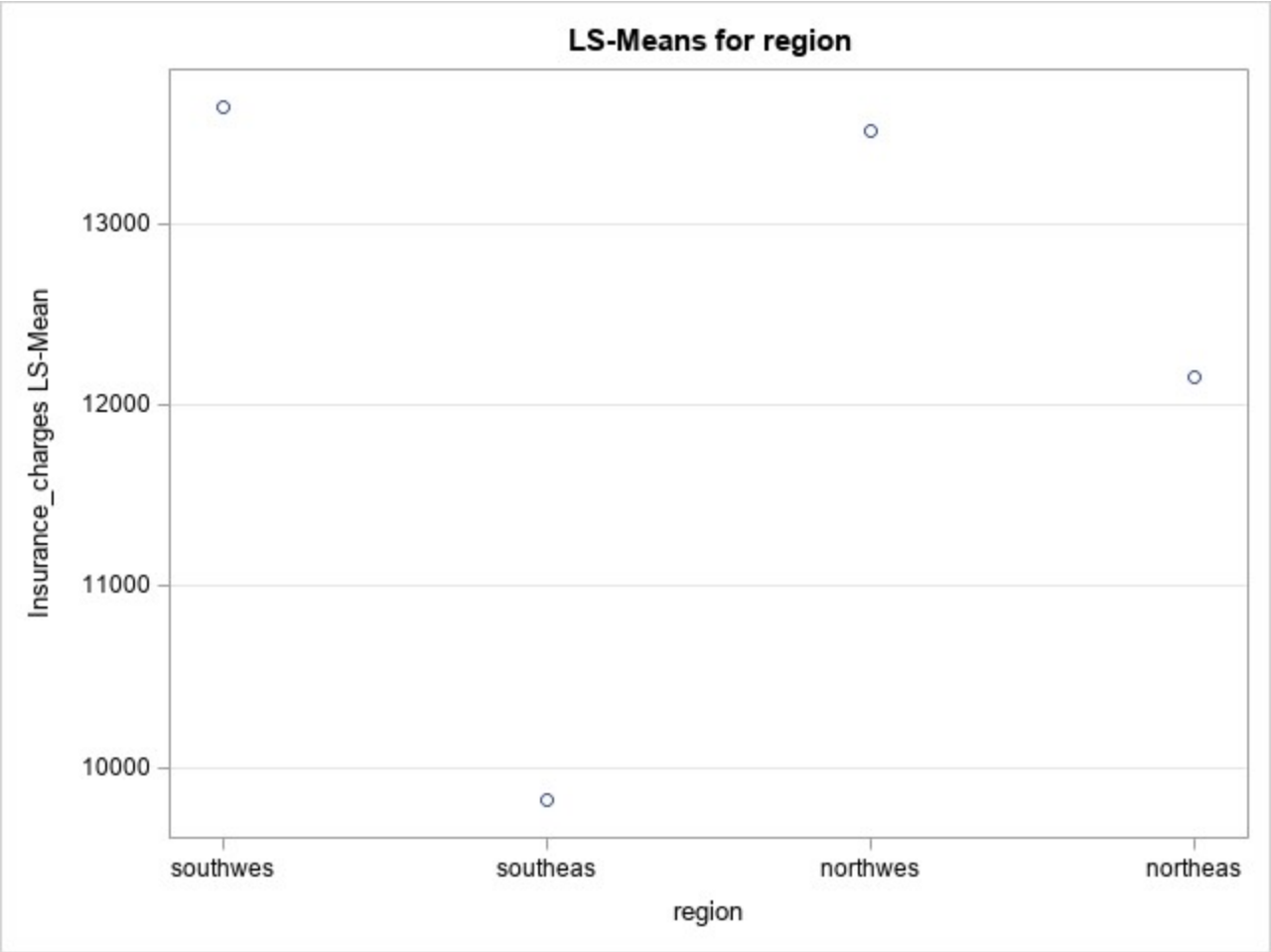
RBD

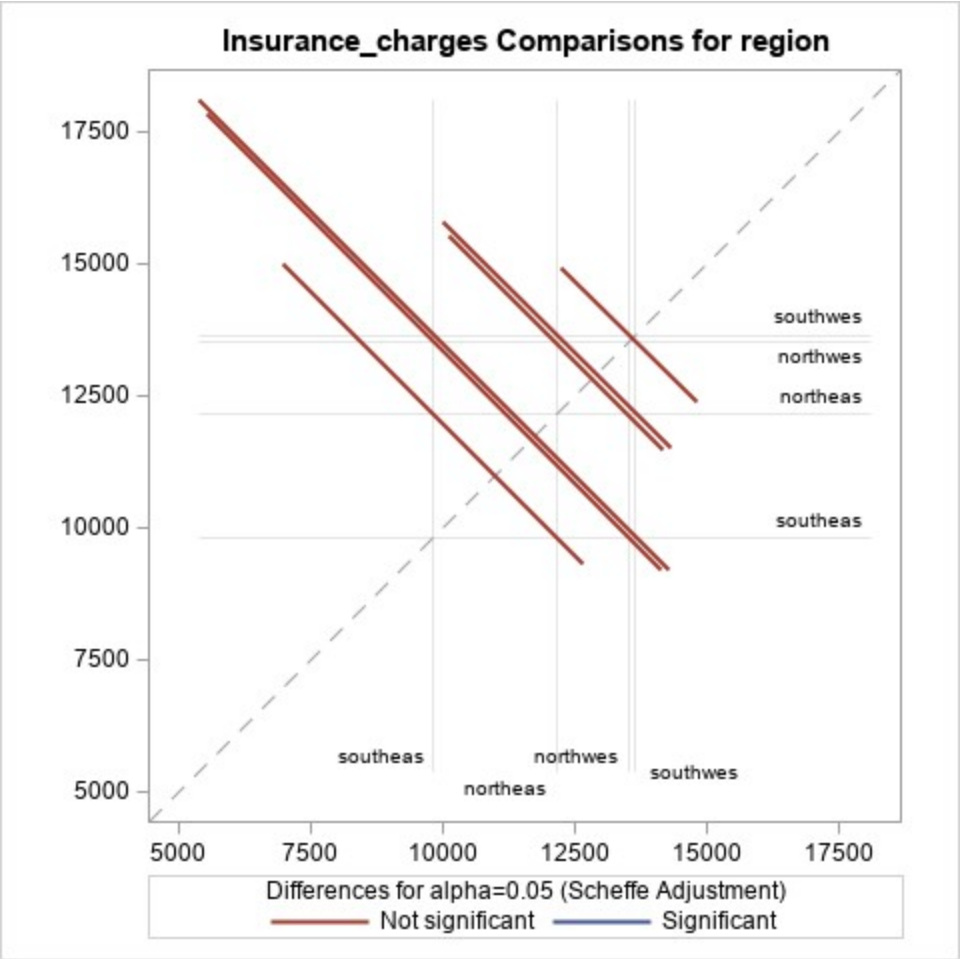
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Scheffe

region	Insurance_charges LSMEAN	LSMEAN Number
southwes	13641.3466	1
southeas	9820.6021	2
northwes	13508.6189	3
northeas	12148.7254	4

Least Squares Means for effect region
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4
1		0.6954	0.9992	0.8138
2	0.6954		0.6962	0.7237
3	0.9992	0.6962		0.8288
4	0.8138	0.7237	0.8288	


LS-Means for region
Insurance_charges LS-Mean
13000
12000
11000
10000
southwes
southeas
northwes
northeas
region


Insurance_charges Comparisons for region
17500
15000
12500
10000
7500
5000
southwes
northwes
northeas
southeas
southeas
northwes
southwes
northeas
5000
7500
10000
12500
15000
17500
Differences for alpha=0.05 (Scheffe Adjustment)
Not significant
Significant

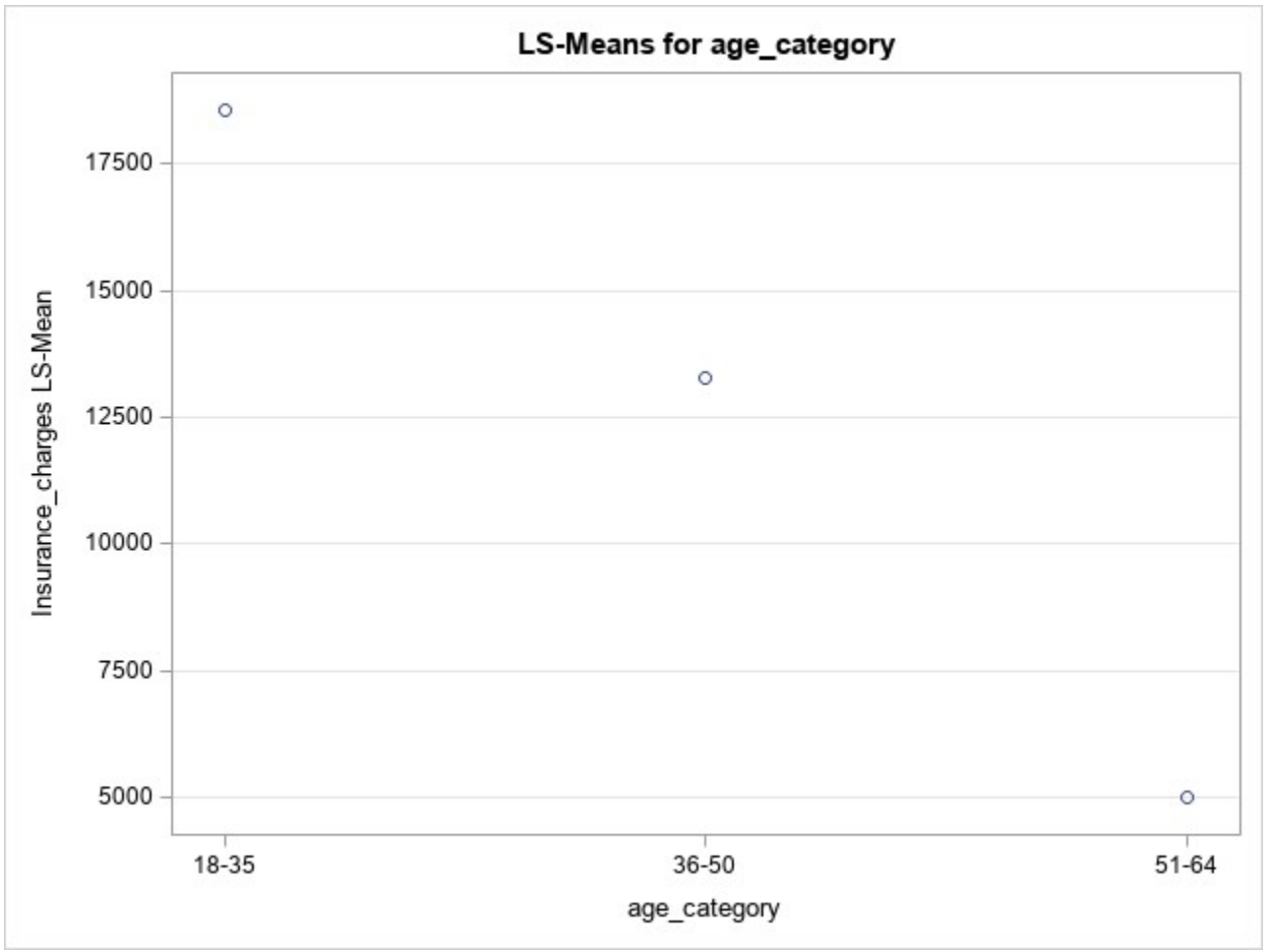
RBD

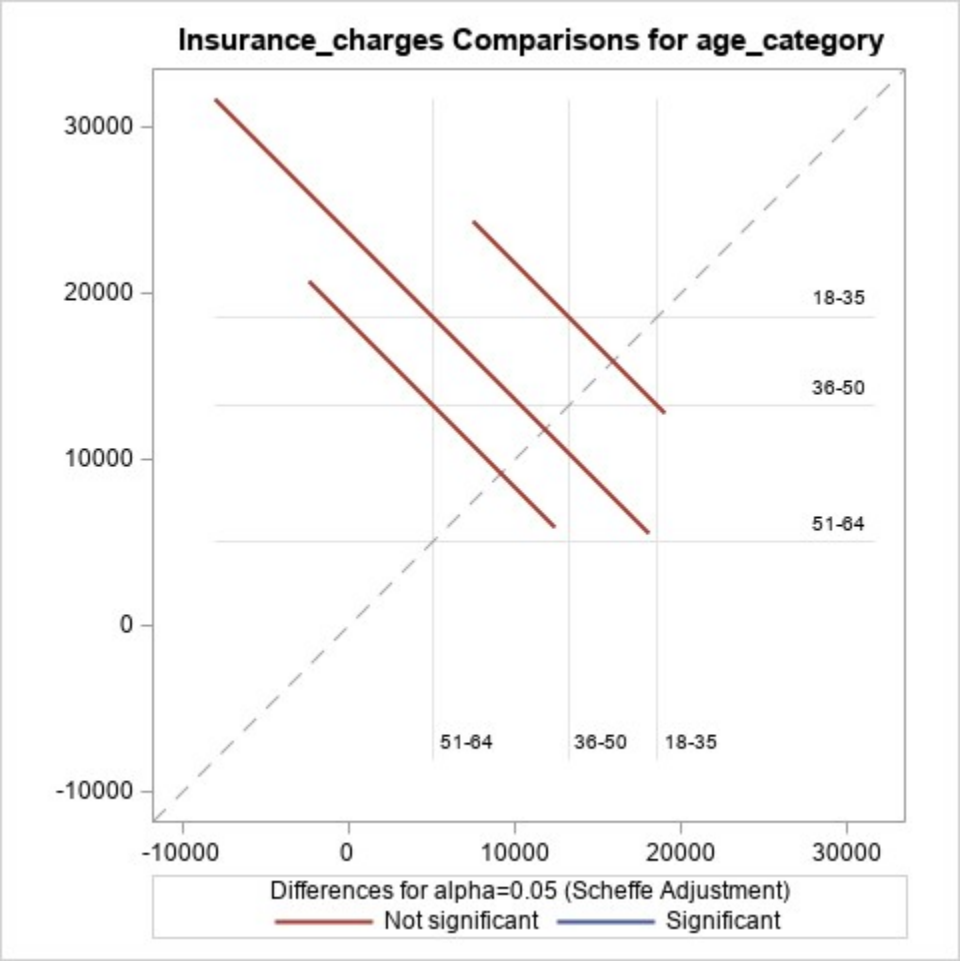
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Scheffe

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	18564.8487	1
36-50	13261.6394	2
51-64	5012.9817	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		0.5316	0.4469
2	0.5316		0.3949
3	0.4469	0.3949	




Insurance_charges Comparisons for age_category
30000
20000
10000
0
-10000
18-35
36-50
51-64
51-64
36-50
18-35
-10000
0
10000
20000
30000
Differences for alpha=0.05 (Scheffe Adjustment)
Not significant
Significant

RBD

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
number_of_children	6	0 1 3 2 5 4
age_category	3	18-35 36-50 51-64

Number of Observations Read	1339
Number of Observations Used	1338

RBD

The GLM Procedure

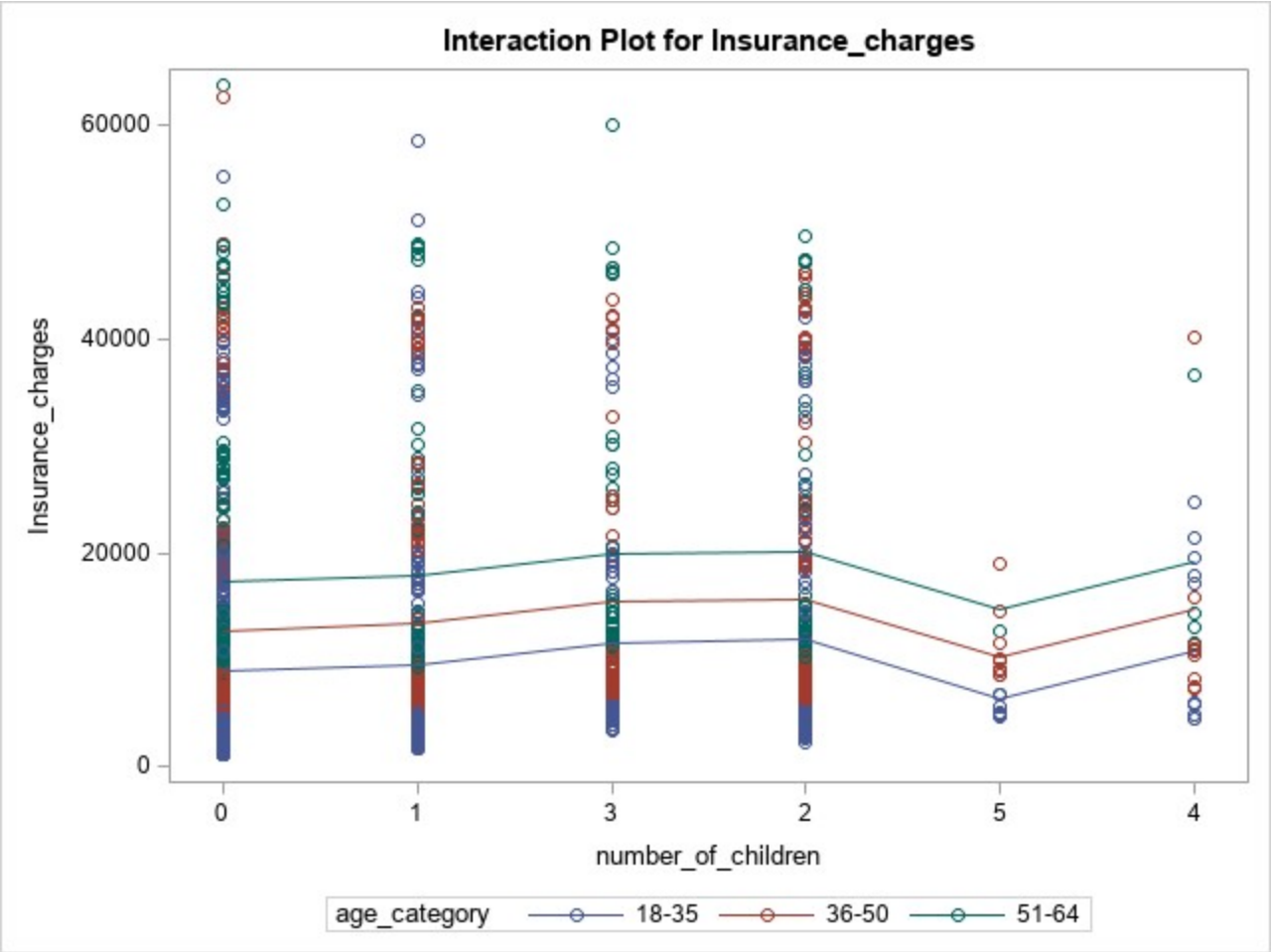
Dependent Variable: Insurance_charges

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	17770158896	2538594128	18.94	<.0001
Error	1330	178304115961	134063245.08		
Corrected Total	1337	196074274857			

R-Square	Coeff Var	Root MSE	Insurance_charges Mean
0.090630	87.25099	11578.57	13270.41

Source	DF	Type I SS	Mean Square	F Value	Pr > F
number_of_children	5	2396895650	479379130	3.58	0.0032
age_category	2	15373263246	7686631623	57.34	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
number_of_children	5	2146451738	429290348	3.20	0.0070
age_category	2	15373263246	7686631623	57.34	<.0001


Interaction Plot for Insurance_charges
Insurance_charges
60000
40000
20000
0
0
1
3
2
5
4
number_of_children
age_category
18-35
36-50
51-64

RBD

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
number_of_children	6	0 1 3 2 5 4
age_category	3	18-35 36-50 51-64

Number of Observations Read	1339
Number of Observations Used	1338

RBD

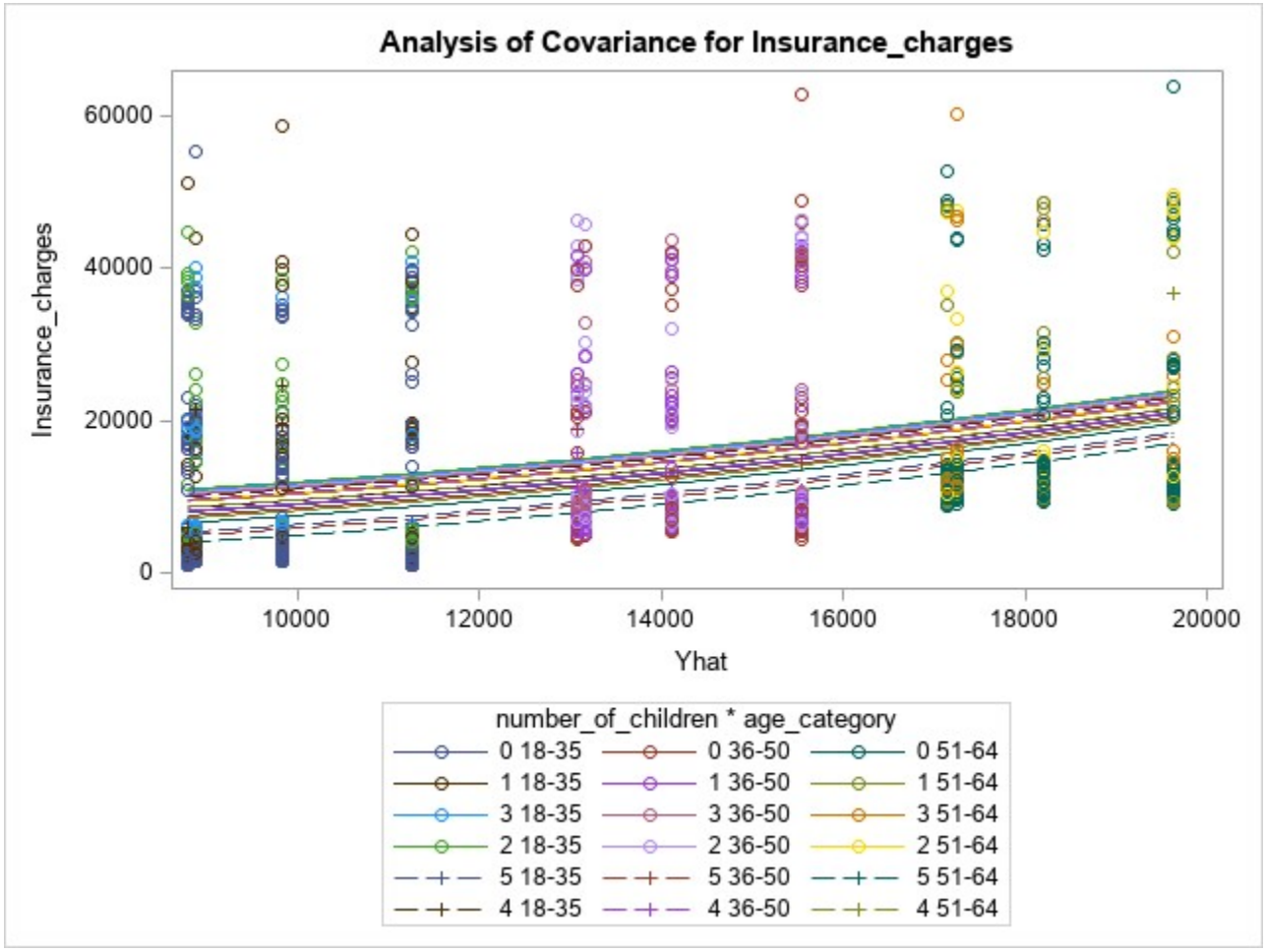
The GLM Procedure

Dependent Variable: Insurance_charges

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	19652340150	2456542518.7	18.51	<.0001
Error	1329	176421934707	132747881.65		
Corrected Total	1337	196074274857			

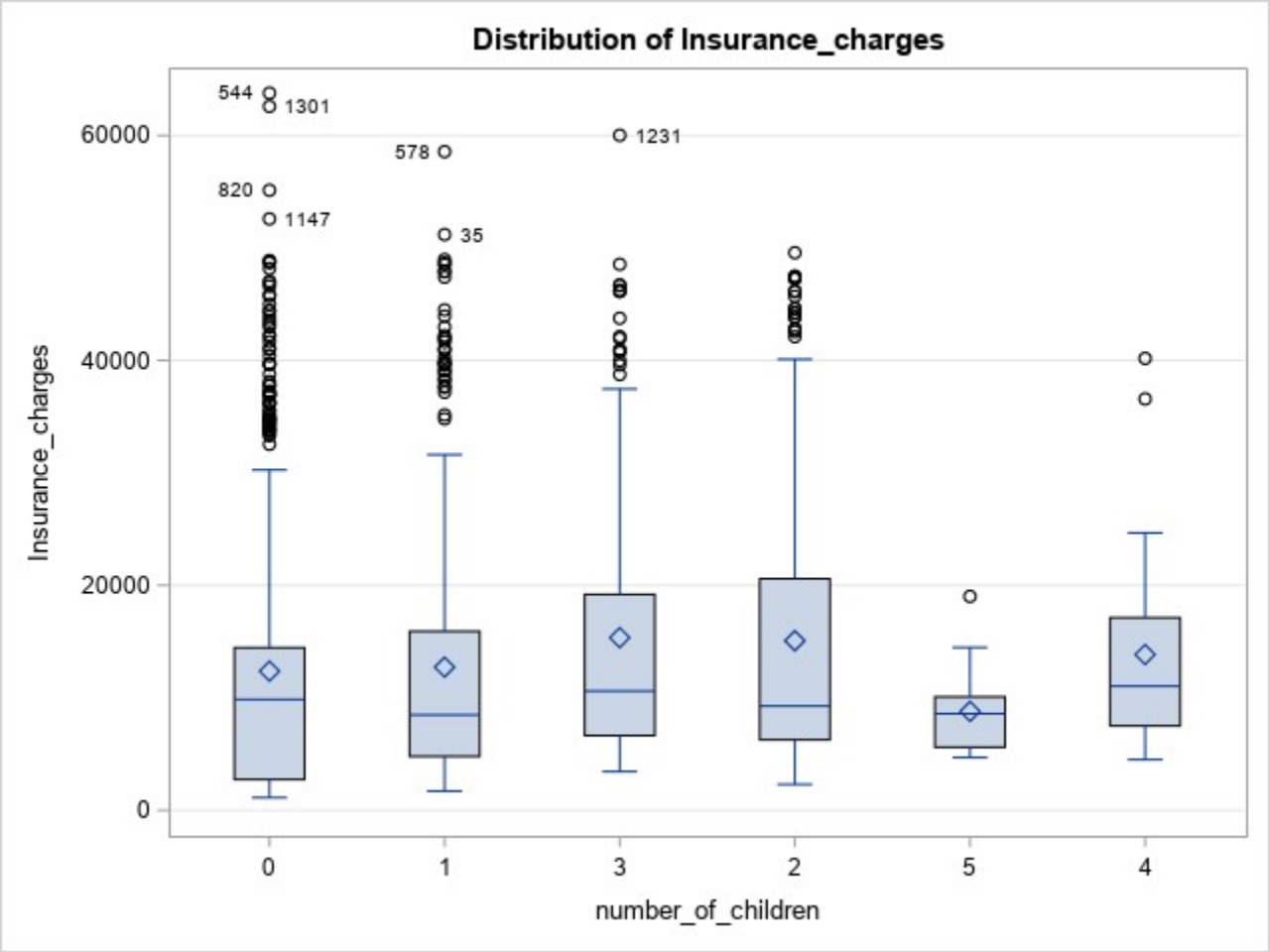
R-Square	Coeff Var	Root MSE	Insurance_charges Mean
0.100229	86.82190	11521.63	13270.41

Source	DF	Type I SS	Mean Square	F Value	Pr > F
number_of_children	5	2396895650	479379130	3.61	0.0030
age_category	2	15373263246	7686631623	57.90	<.0001
Yhat*Yhat	1	1882181254	1882181254	14.18	0.0002



RBD

The GLM Procedure



RBD

The GLM Procedure

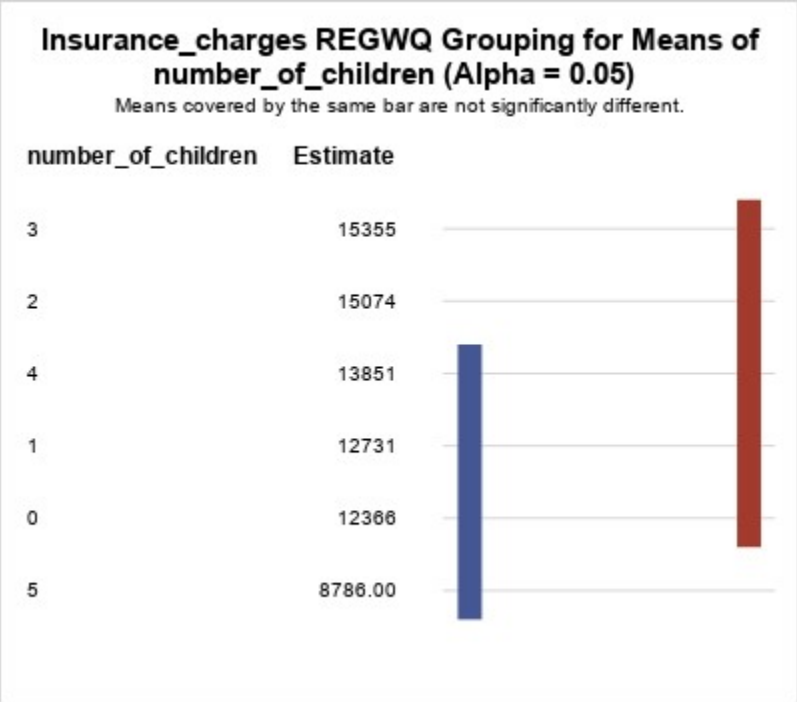
Ryan-Einot-Gabriel-Welsch Multiple Range Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Harmonic Mean of Cell Sizes	54.09293

Note: Cell sizes are not equal.

Number of Means	**2**	**3**	**4**	**5**	**6**
Critical Range	5296.4111	5766.2822	6021.3932	6051.5112	6322.5715



RBD

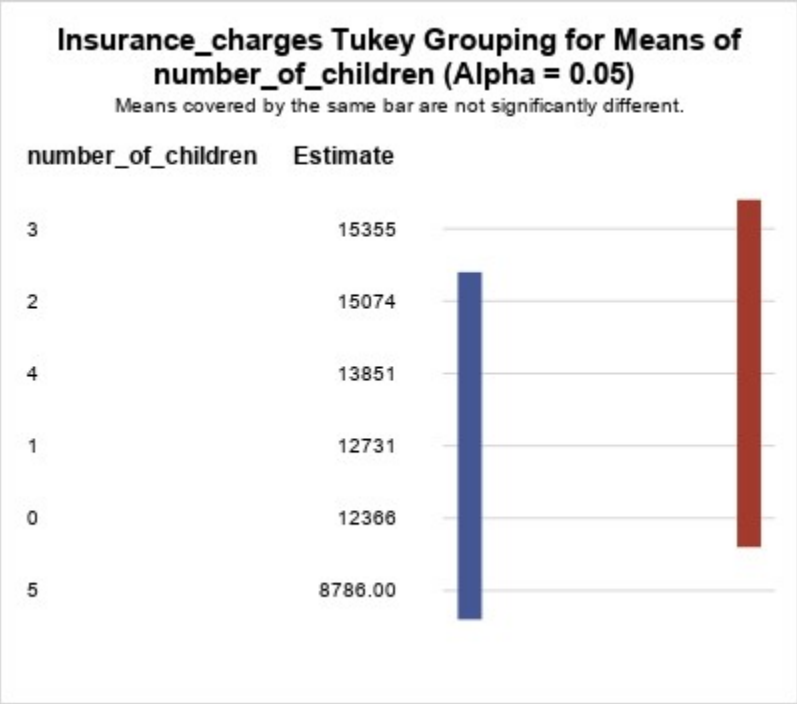
The GLM Procedure

Tukey's Studentized Range (HSD) Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of Studentized Range	4.03599
Minimum Significant Difference	6322.6
Harmonic Mean of Cell Sizes	54.09293

Note: Cell sizes are not equal.



RBD

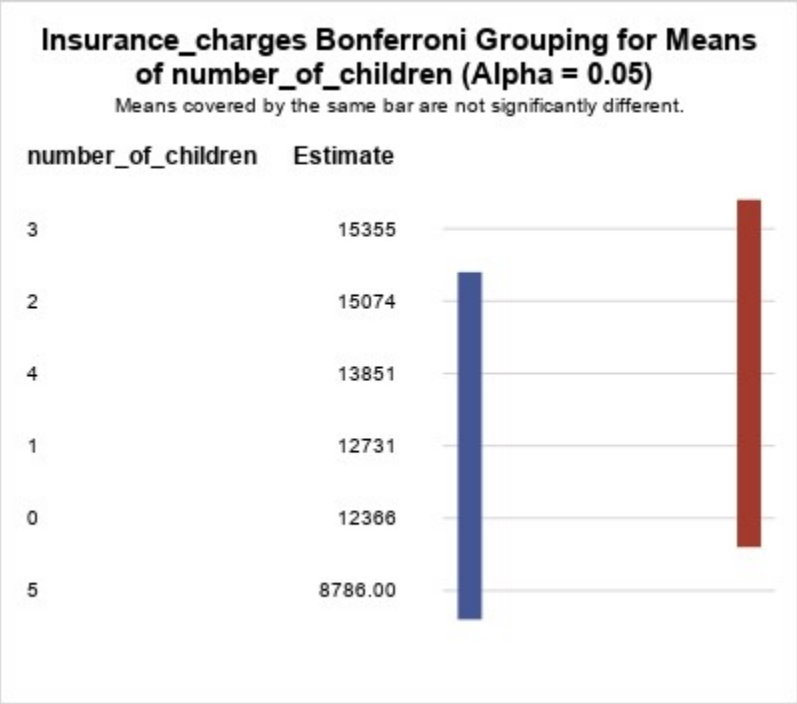
The GLM Procedure

Bonferroni (Dunn) t Tests for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of t	2.94052
Minimum Significant Difference	6514.5
Harmonic Mean of Cell Sizes	54.09293

Note: Cell sizes are not equal.



RBD

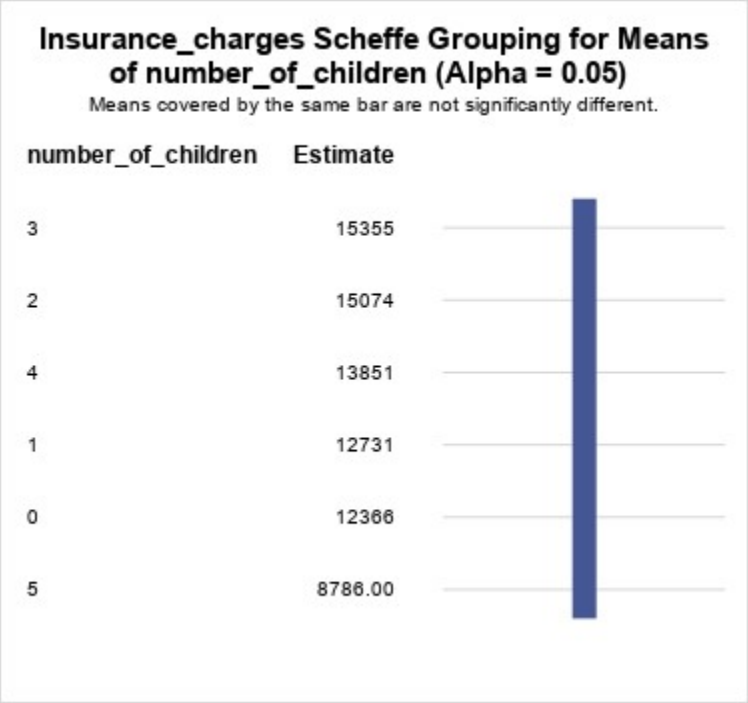
The GLM Procedure

Scheffe's Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

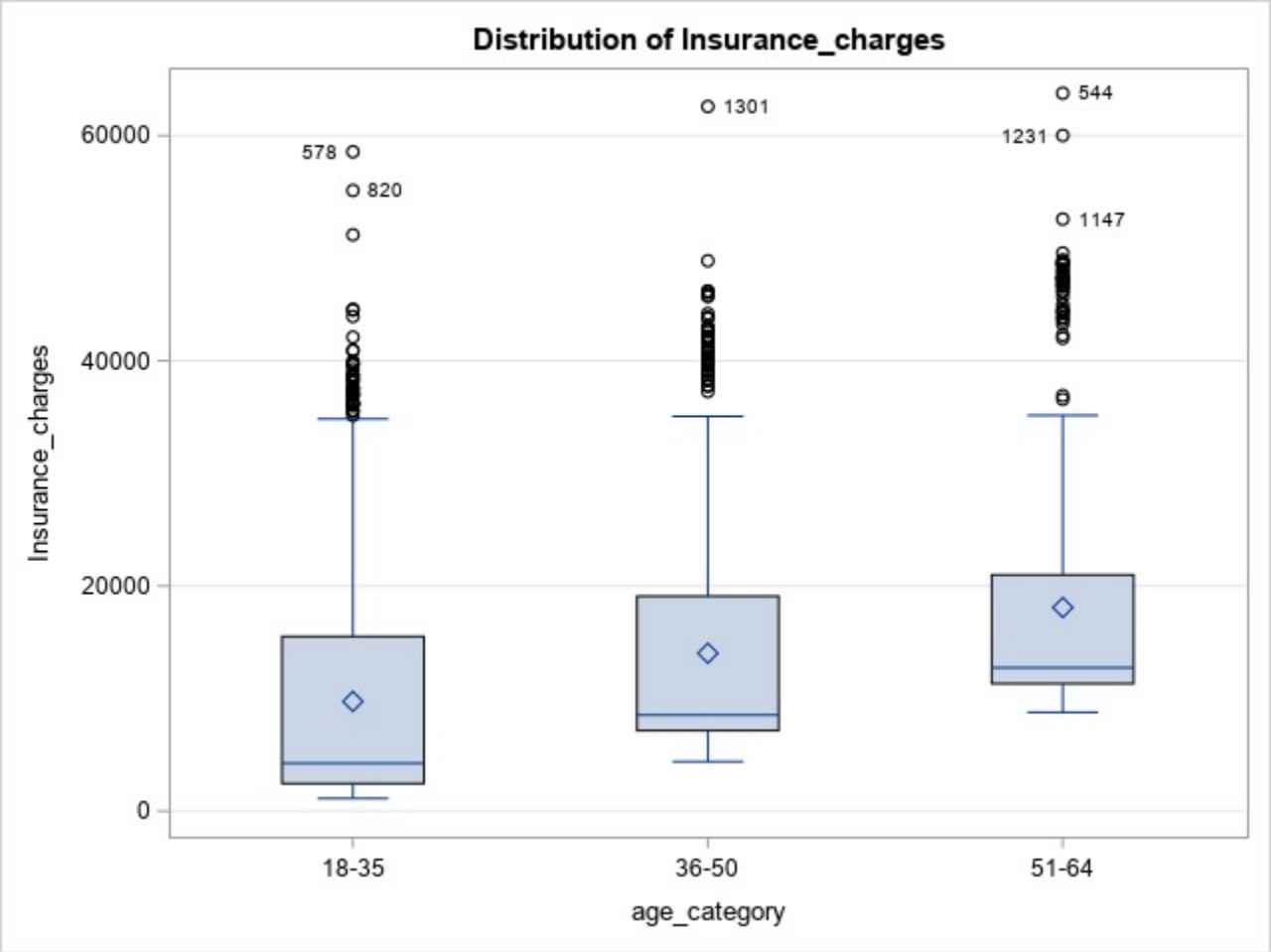
Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of F	2.22083
Minimum Significant Difference	7382.5
Harmonic Mean of Cell Sizes	54.09293

Note: Cell sizes are not equal.



RBD

The GLM Procedure



RBD

The GLM Procedure

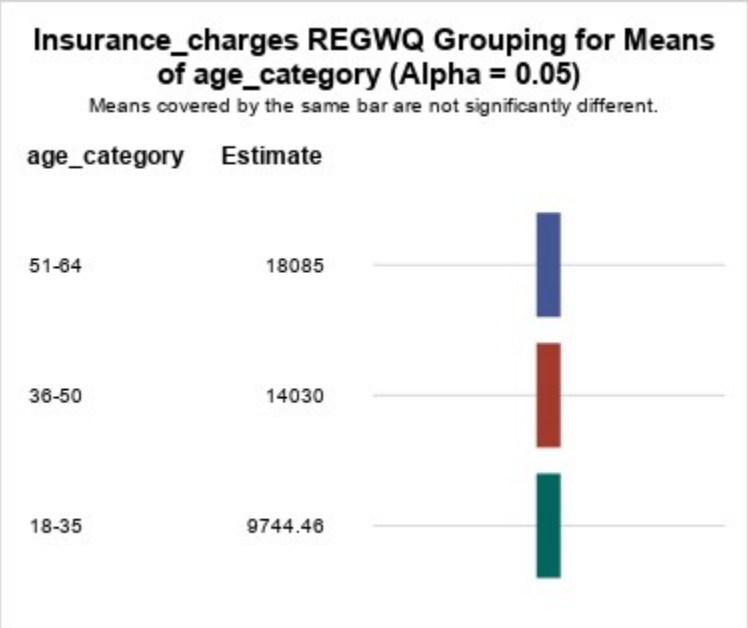
Ryan-Einot-Gabriel-Welsch Multiple Range Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.

Number of Means	**2**	**3**
Critical Range	1544.2837	1847.0269



RBD

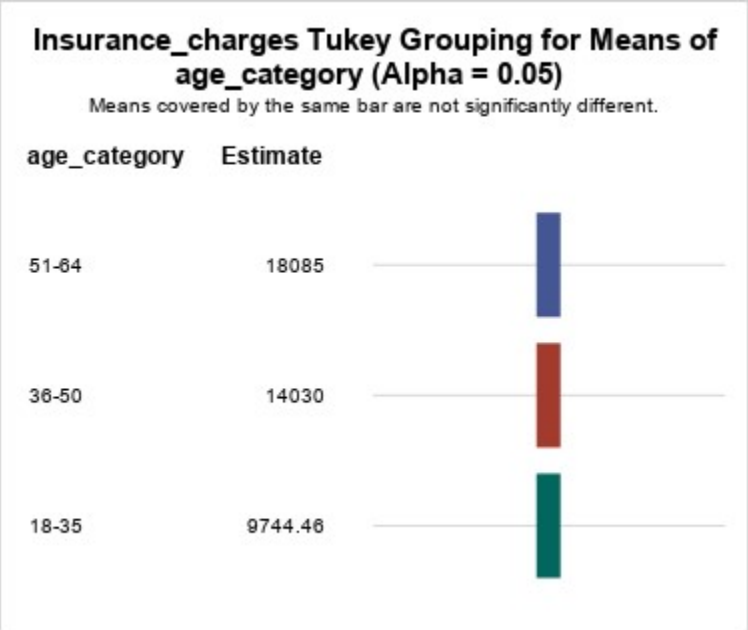
The GLM Procedure

Tukey's Studentized Range (HSD) Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of Studentized Range	3.31822
Minimum Significant Difference	1847
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



RBD

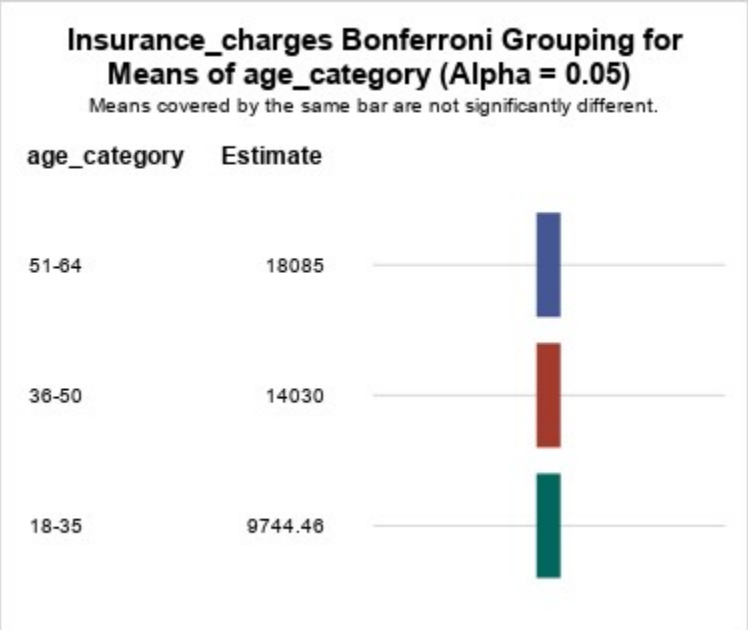
The GLM Procedure

Bonferroni (Dunn) t Tests for Insurance_charges

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of t	2.39701
Minimum Significant Difference	1886.9
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



RBD

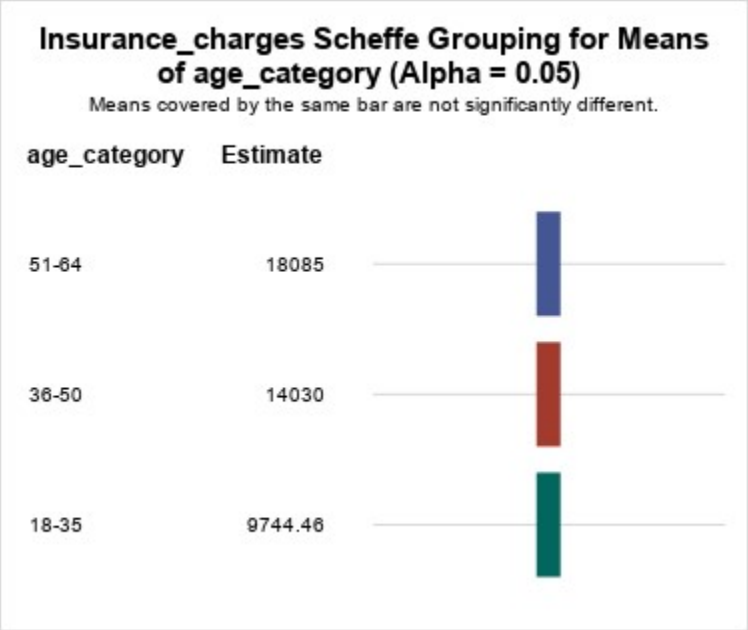
The GLM Procedure

Scheffe's Test for Insurance_charges

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	1329
Error Mean Square	1.3275E8
Critical Value of F	3.00250
Minimum Significant Difference	1929
Harmonic Mean of Cell Sizes	428.4411

Note: Cell sizes are not equal.



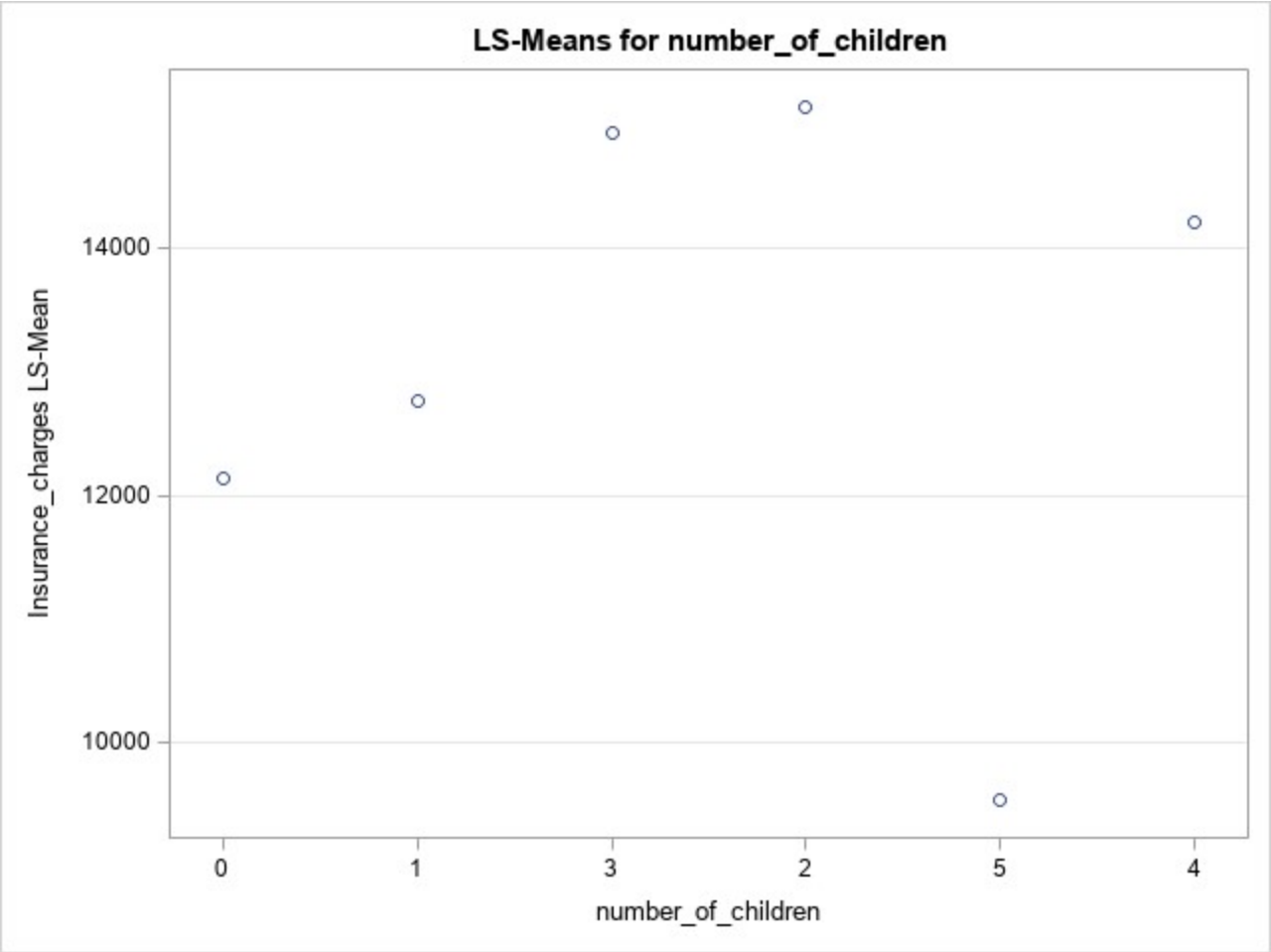
RBD

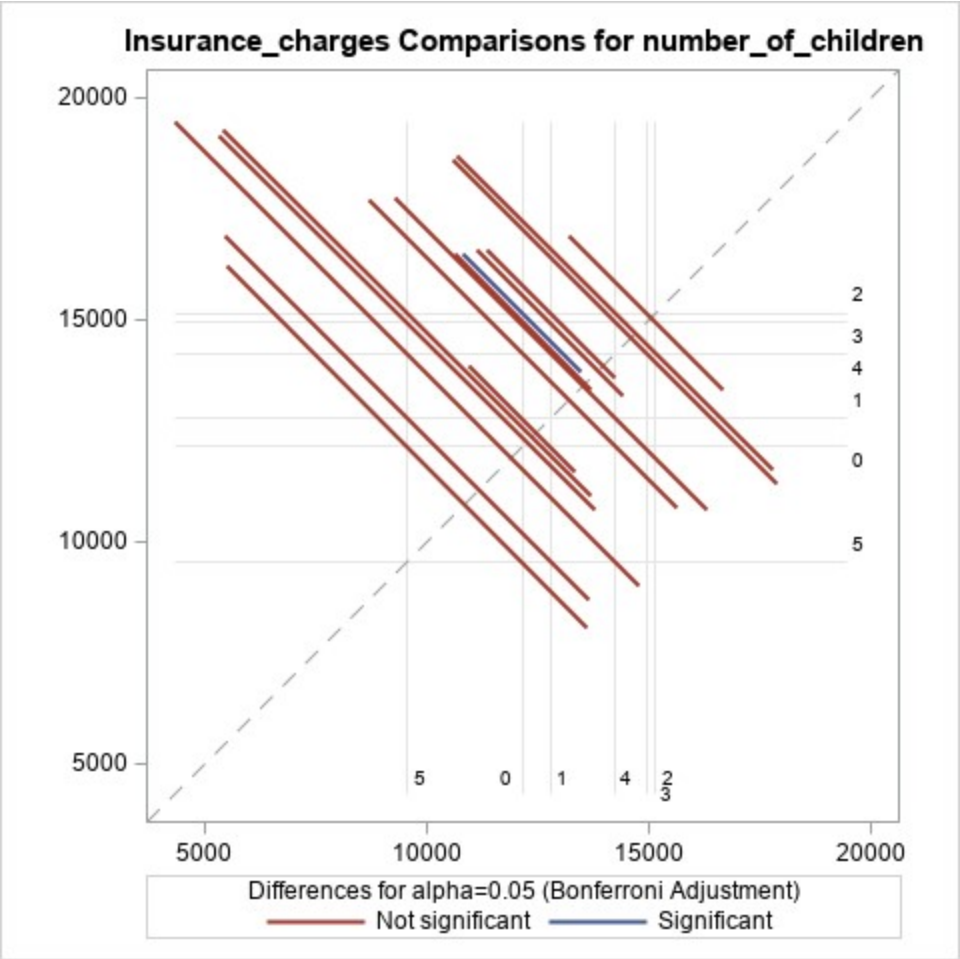
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Bonferroni

number_of_children	Insurance_charges LSMEAN	LSMEAN Number
0	12140.7605	1
1	12765.6453	2
3	14934.5160	3
2	15148.1187	4
5	9536.4229	5
4	14214.6370	6

Least Squares Means for effect number_of_children
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4	5	6
1		1.0000	0.1152	0.0139	1.0000	1.0000
2	1.0000		0.8048	0.2309	1.0000	1.0000
3	0.1152	0.8048		1.0000	0.9077	1.0000
4	0.0139	0.2309	1.0000		0.6994	1.0000
5	1.0000	1.0000	0.9077	0.6994		1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000	


LS-Means for number_of_children
Insurance_charges LS-Mean
14000
12000
10000
0
1
3
2
5
4
number_of_children


Insurance_charges Comparisons for number_of_children
20000
15000
10000
5000
5000
10000
15000
20000
2
3
4
1
0
5
5
0
1
4
2
3
Differences for alpha=0.05 (Bonferroni Adjustment)
Not significant
Significant

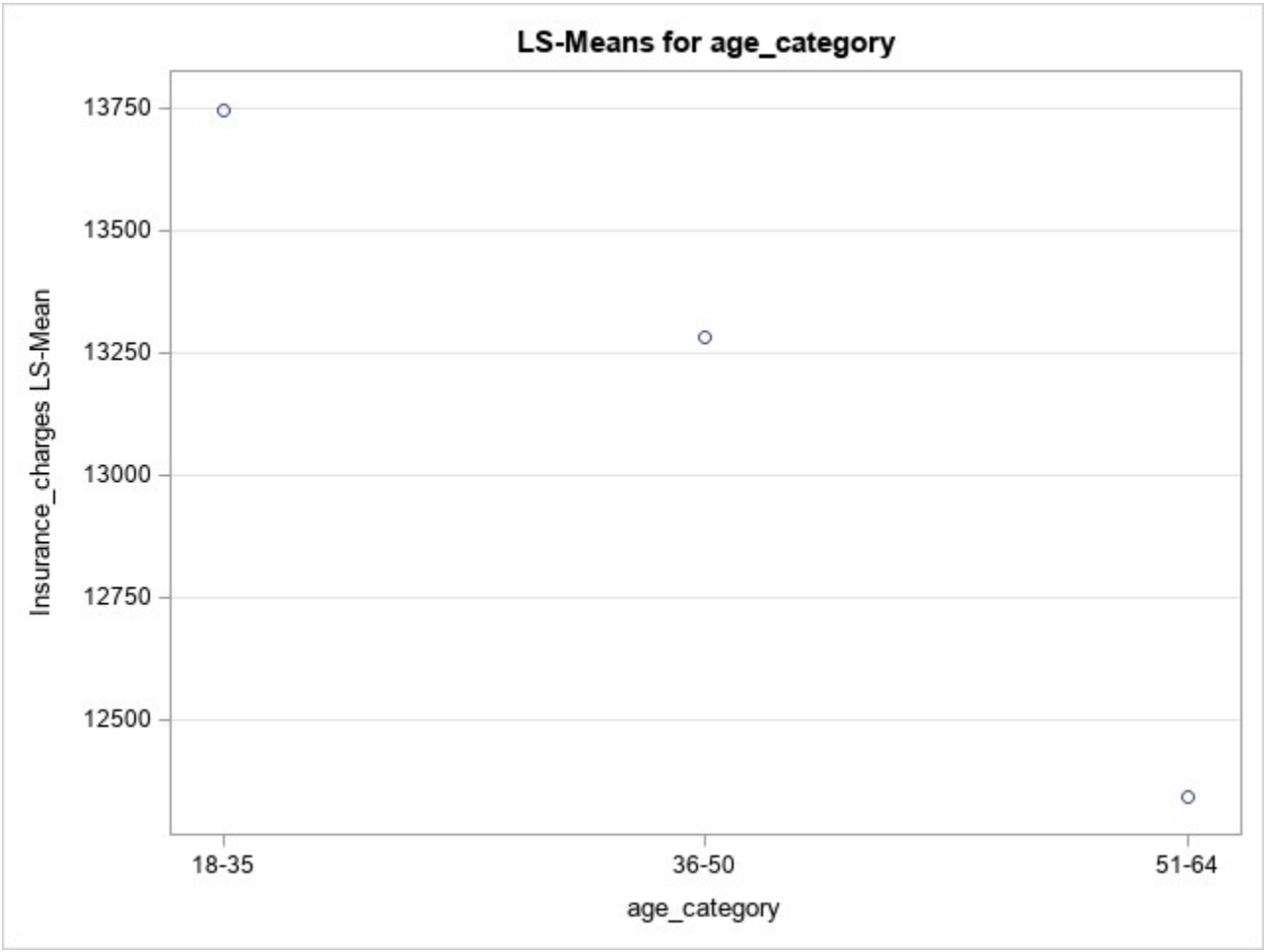
RBD

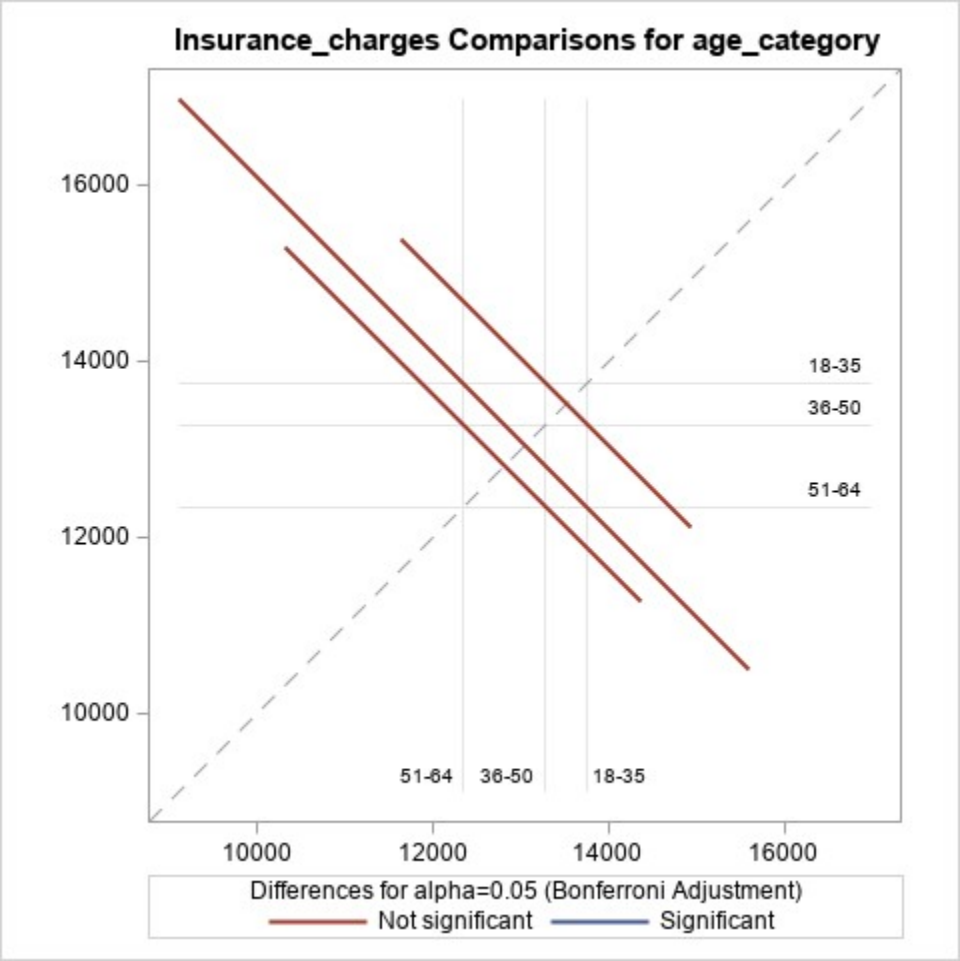
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Bonferroni

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	13744.6085	1
36-50	13281.5433	2
51-64	12343.8983	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		1.0000	1.0000
2	1.0000		1.0000
3	1.0000	1.0000	




Insurance_charges Comparisons for age_category
16000
14000
12000
10000
18-35
36-50
51-64
51-64
36-50
18-35
10000
12000
14000
16000
Differences for alpha=0.05 (Bonferroni Adjustment)
Not significant
Significant

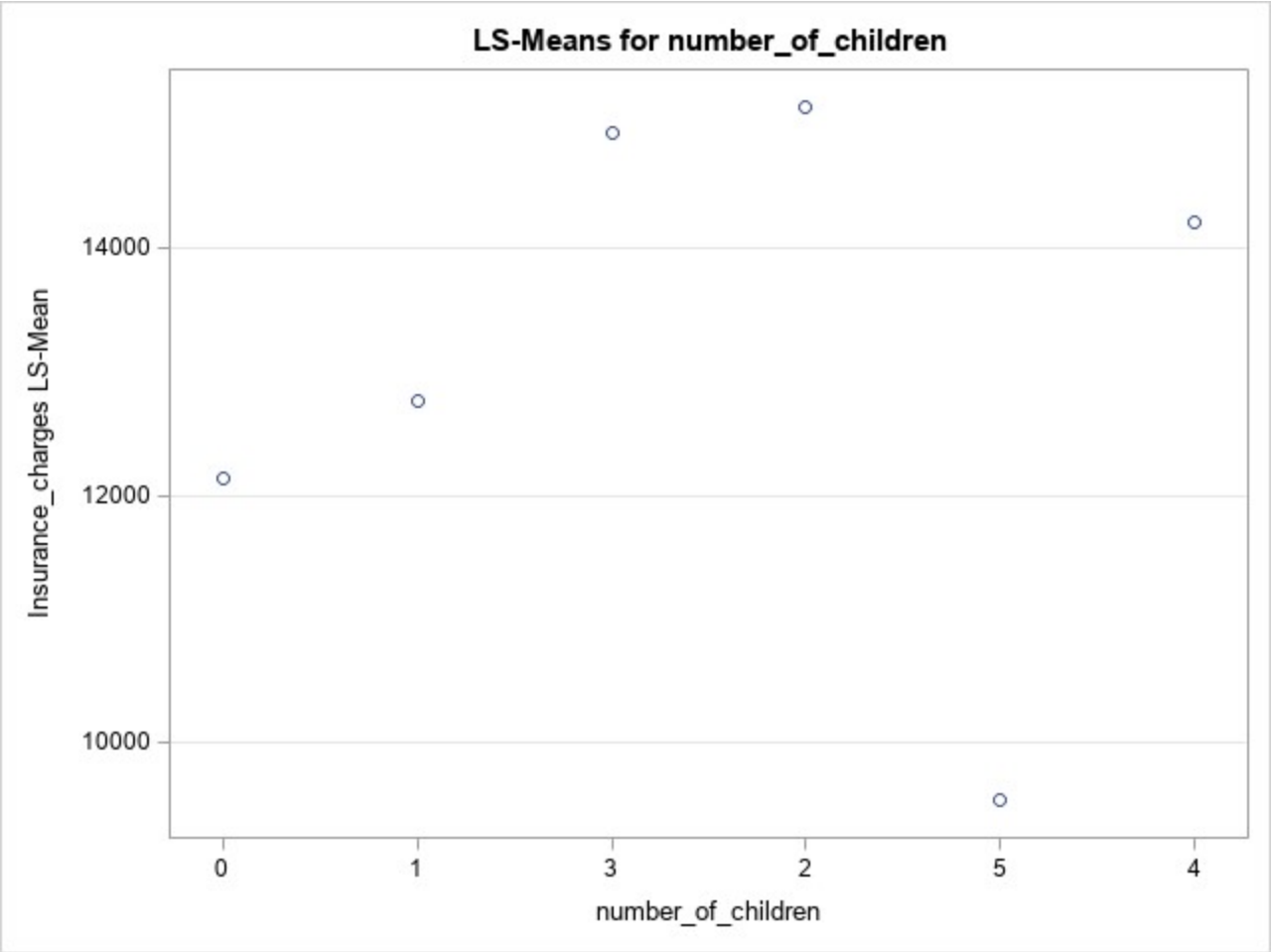
RBD

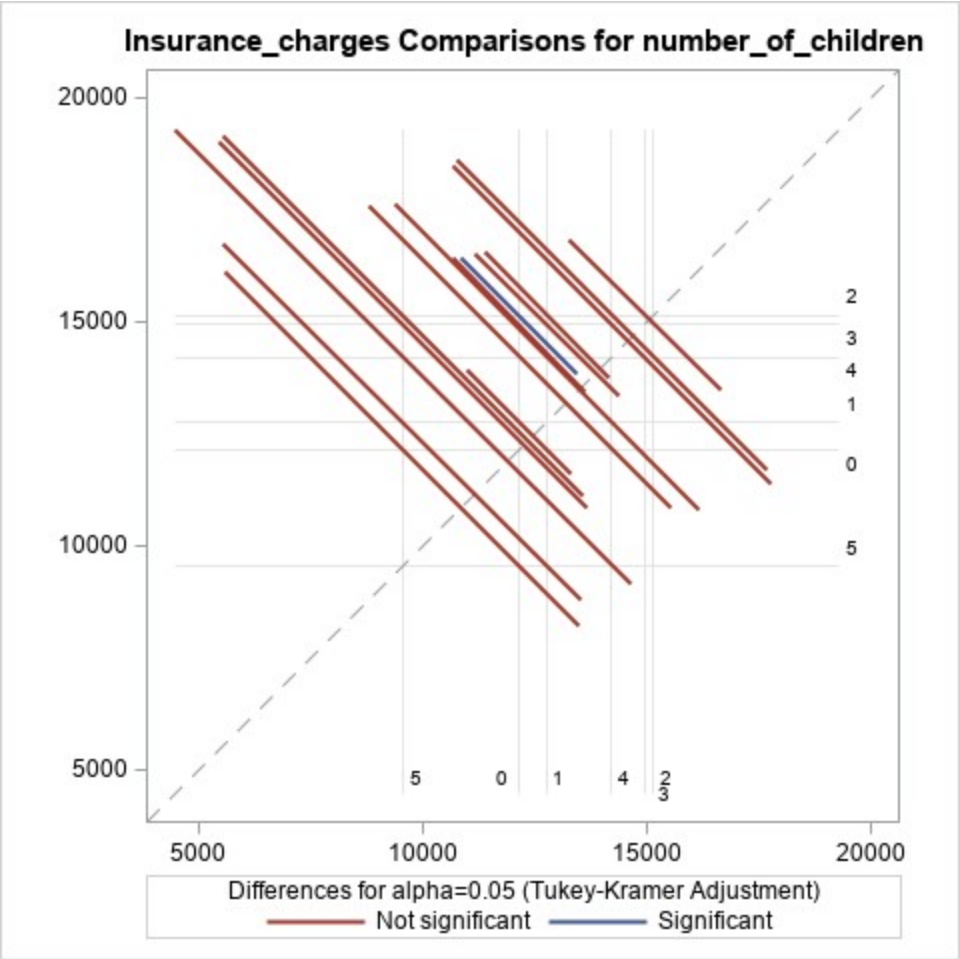
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

number_of_children	Insurance_charges LSMEAN	LSMEAN Number
0	12140.7605	1
1	12765.6453	2
3	14934.5160	3
2	15148.1187	4
5	9536.4229	5
4	14214.6370	6

Least Squares Means for effect number_of_children
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4	5	6
1		0.9732	0.0820	0.0119	0.9361	0.9518
2	0.9732		0.3833	0.1479	0.8573	0.9906
3	0.0820	0.3833		1.0000	0.4158	0.9997
4	0.0119	0.1479	1.0000		0.3476	0.9989
5	0.9361	0.8573	0.4158	0.3476		0.7779
6	0.9518	0.9906	0.9997	0.9989	0.7779	


LS-Means for number_of_children
Insurance_charges LS-Mean
14000
12000
10000
0
1
3
2
5
4
number_of_children


Insurance_charges Comparisons for number_of_children
20000
15000
10000
5000
5000
10000
15000
20000
2
3
4
1
0
5
5
0
1
4
2
3
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

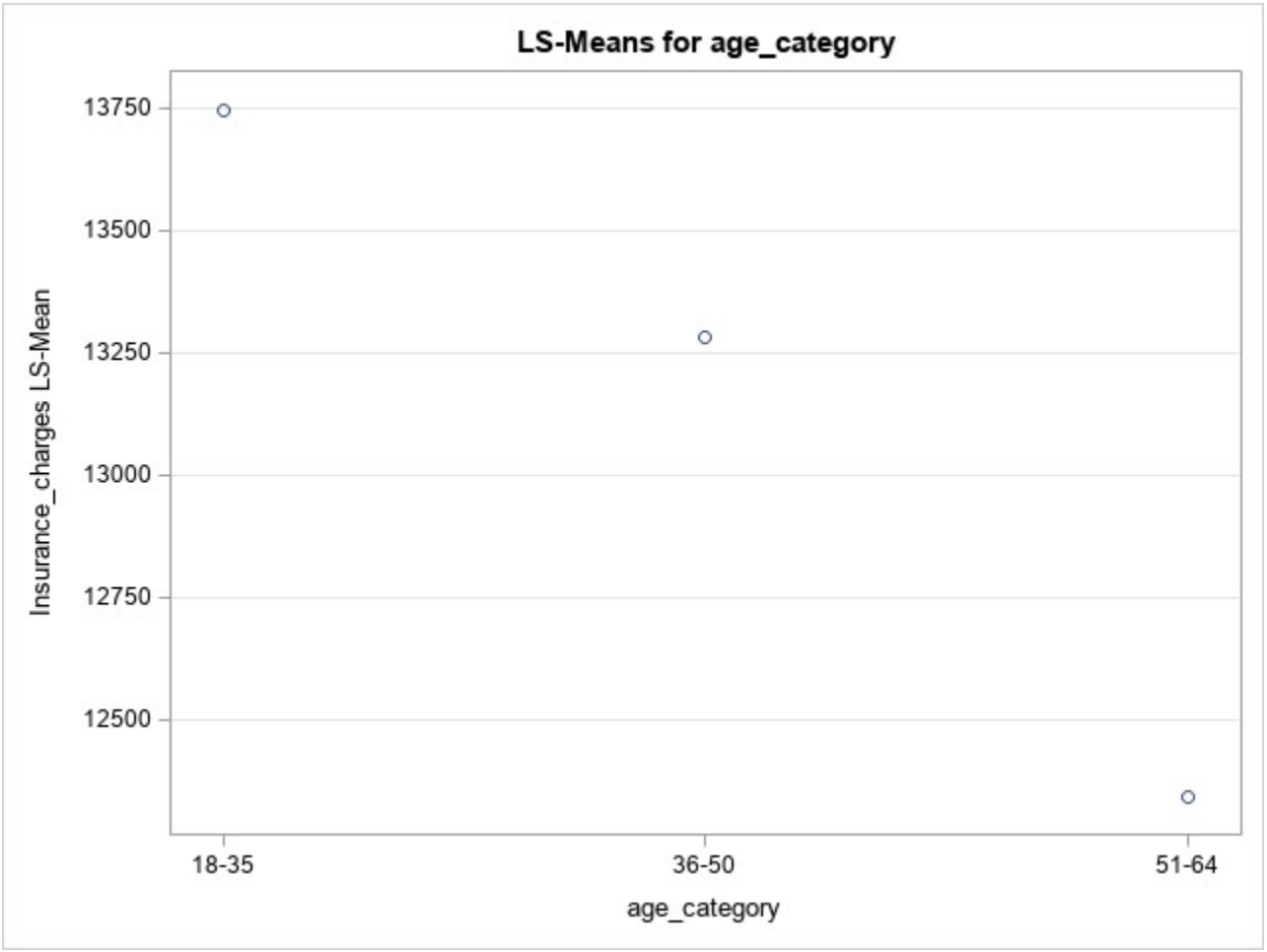
RBD

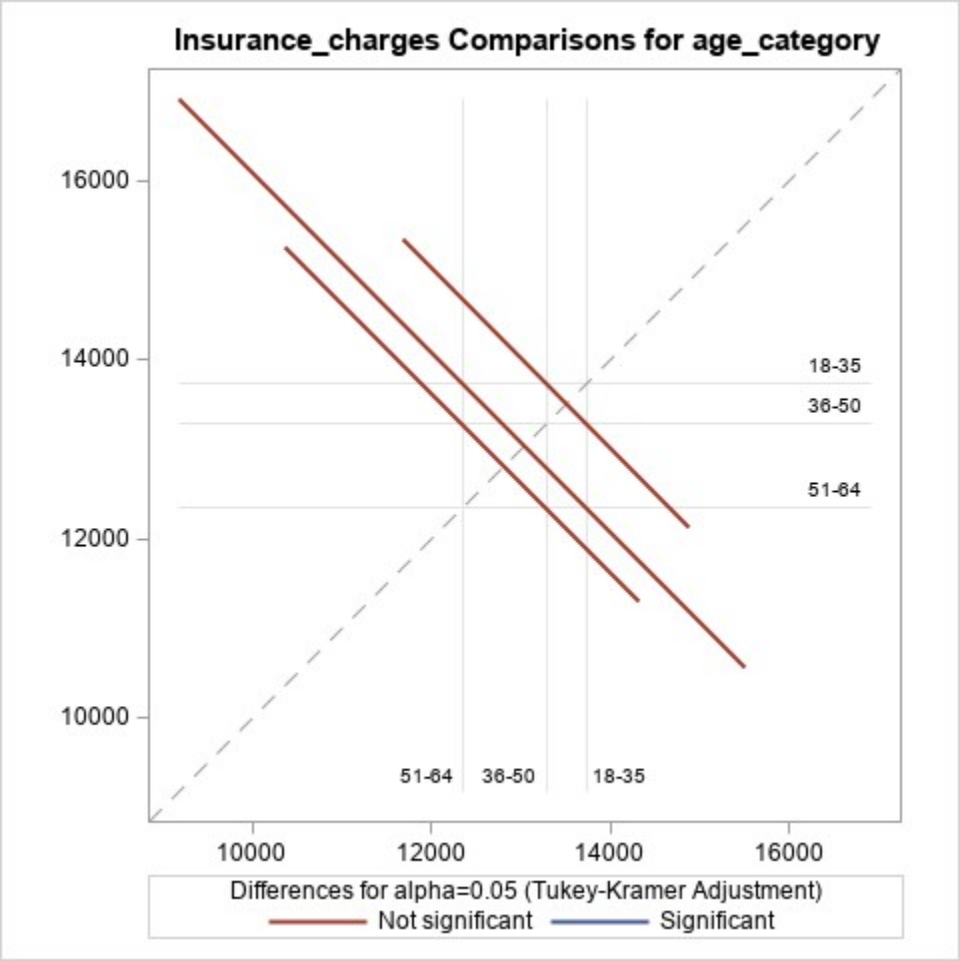
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	13744.6085	1
36-50	13281.5433	2
51-64	12343.8983	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		0.9391	0.8627
2	0.9391		0.8437
3	0.8627	0.8437	




Insurance_charges Comparisons for age_category
16000
14000
12000
10000
18-35
36-50
51-64
51-64
36-50
18-35
10000
12000
14000
16000
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant

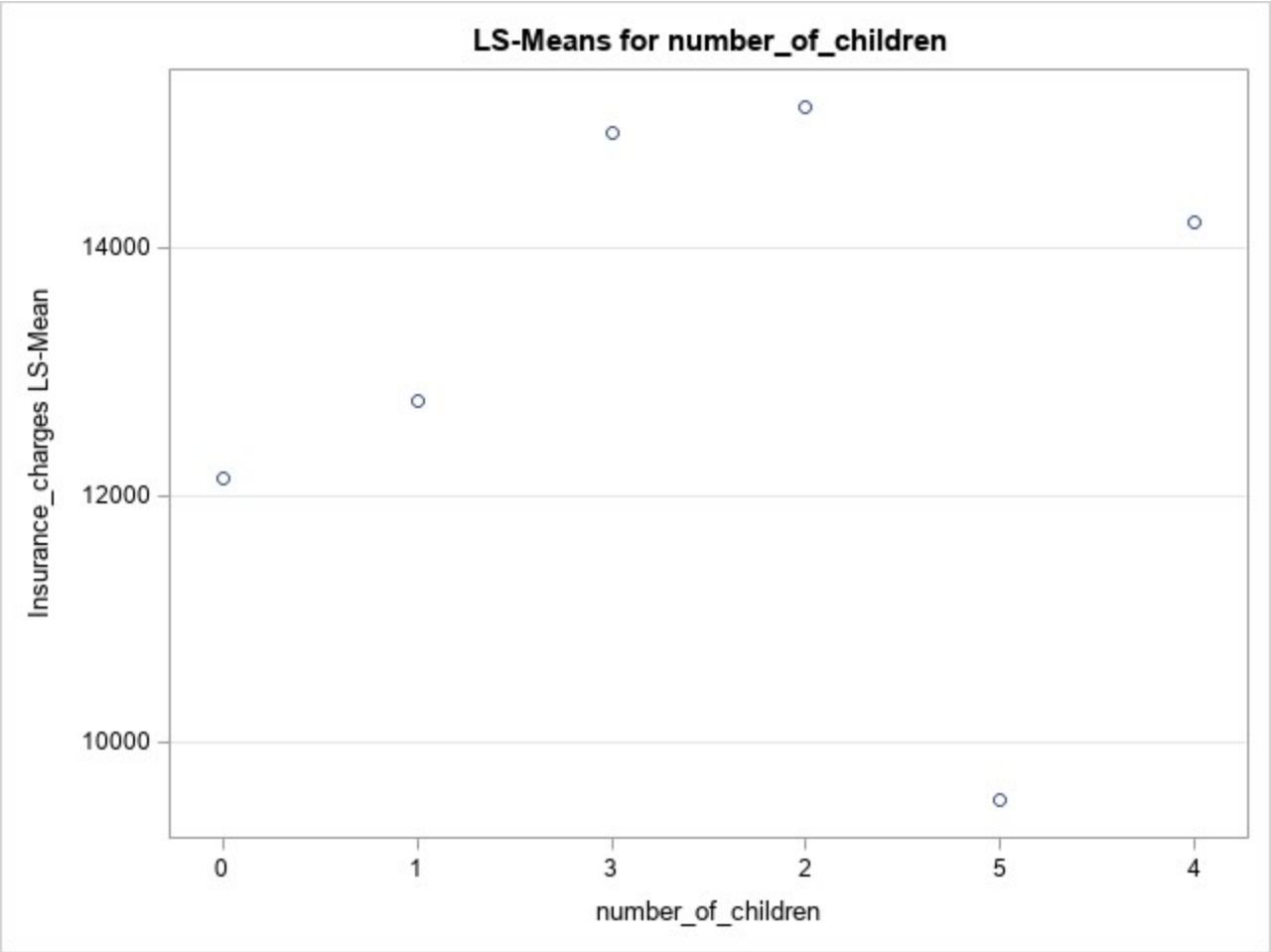
RBD

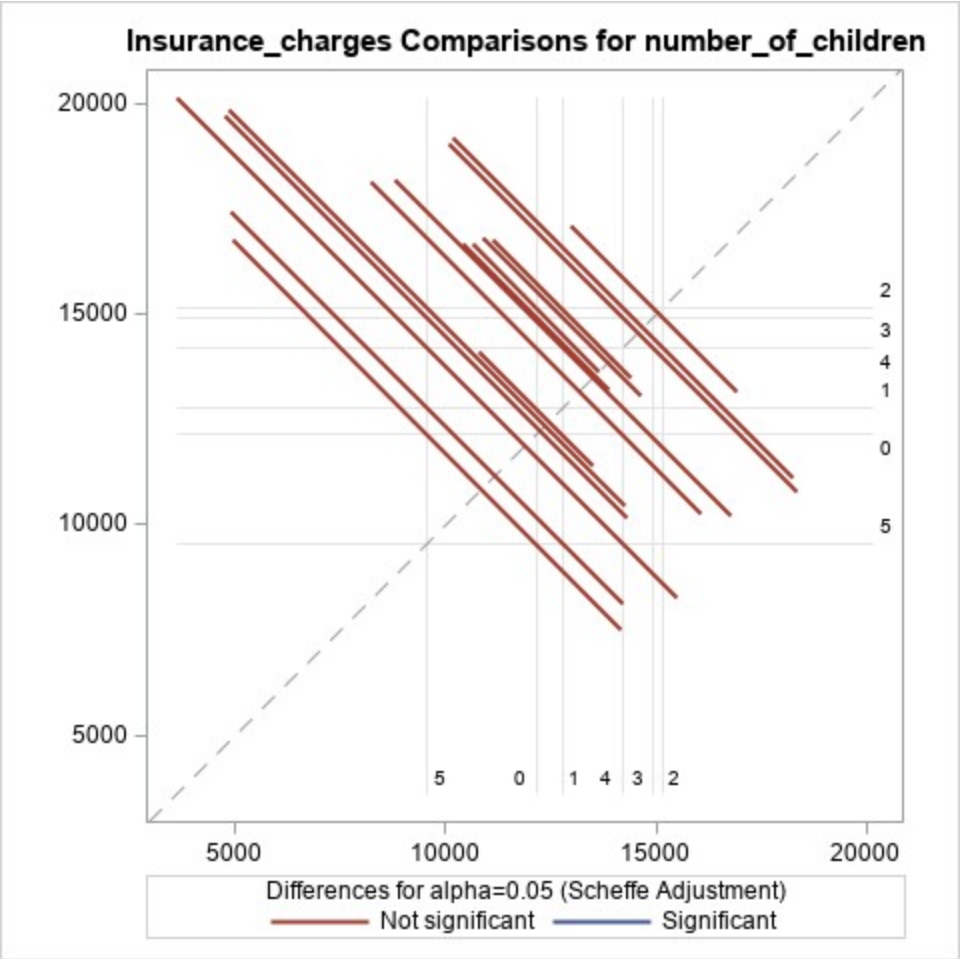
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Scheffe

number_of_children	Insurance_charges LSMEAN	LSMEAN Number
0	12140.7605	1
1	12765.6453	2
3	14934.5160	3
2	15148.1187	4
5	9536.4229	5
4	14214.6370	6

Least Squares Means for effect number_of_children
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3	4	5	6
1		0.9886	0.2120	0.0517	0.9714	0.9788
2	0.9886		0.5891	0.3181	0.9310	0.9962
3	0.2120	0.5891		1.0000	0.6191	0.9999
4	0.0517	0.3181	1.0000		0.5545	0.9996
5	0.9714	0.9310	0.6191	0.5545		0.8858
6	0.9788	0.9962	0.9999	0.9996	0.8858	


LS-Means for number_of_children
Insurance_charges LS-Mean
14000
12000
10000
0
1
3
2
5
4
number_of_children


Insurance_charges Comparisons for number_of_children
20000
15000
10000
5000
5000
10000
15000
20000
2
3
4
1
0
5
5
0
1
4
3
2
Differences for alpha=0.05 (Scheffe Adjustment)
Not significant
Significant

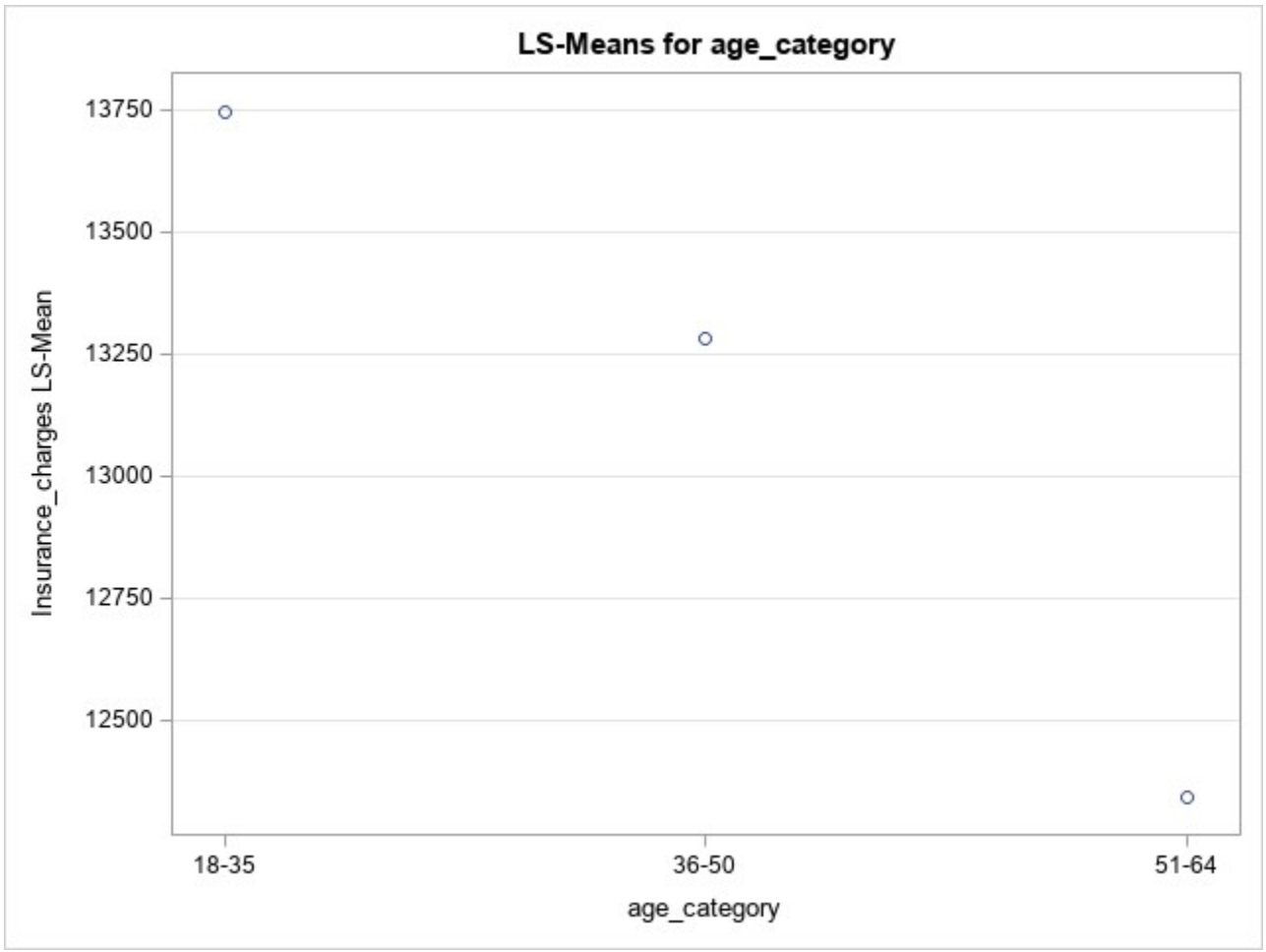
RBD

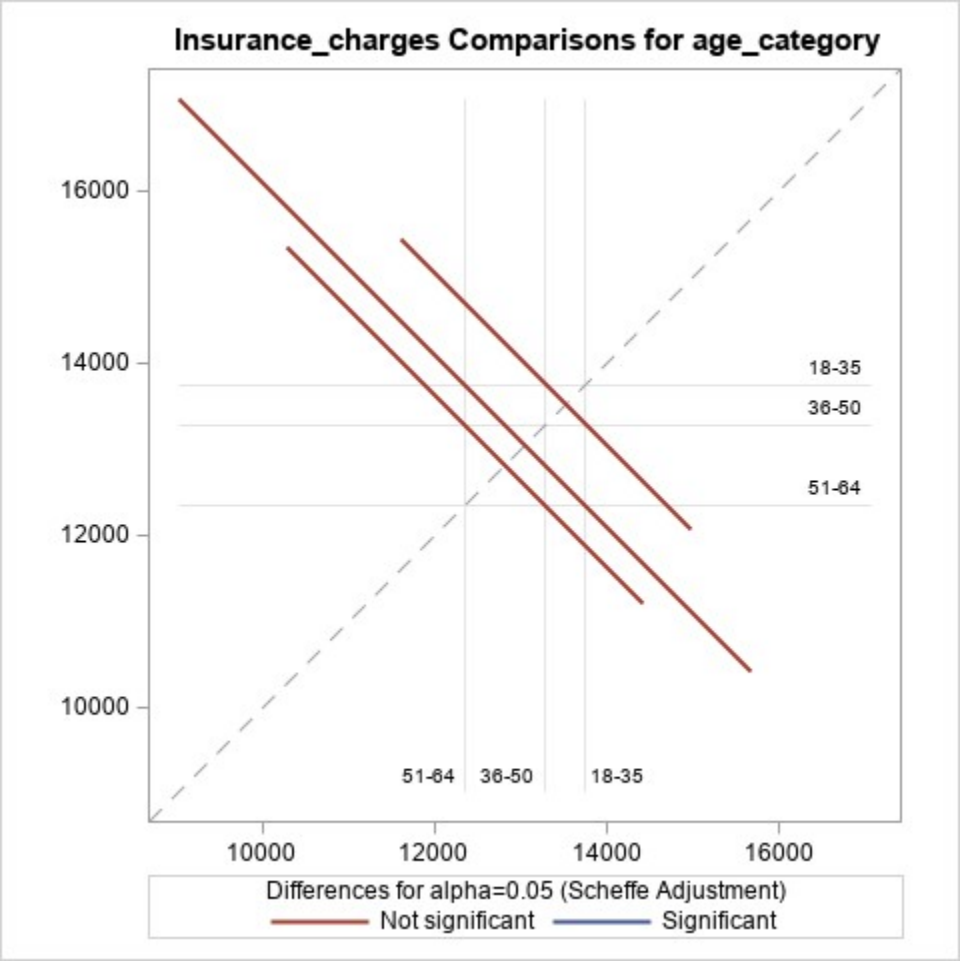
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Scheffe

age_category	Insurance_charges LSMEAN	LSMEAN Number
18-35	13744.6085	1
36-50	13281.5433	2
51-64	12343.8983	3

Least Squares Means for effect age_category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Insurance_charges

i/j	1	2	3
1		0.9446	0.8746
2	0.9446		0.8571
3	0.8746	0.8571	




Insurance_charges Comparisons for age_category
16000
14000
12000
10000
18-35
36-50
51-64
51-64
36-50
18-35
10000
12000
14000
16000
Differences for alpha=0.05 (Scheffe Adjustment)
Not significant
Significant