EFFICACY OF ROBUST REGRESSION APPLIED TO FRACTIONAL FACTORIAL
TREATMENT STRUCTURES

by

MICHAEL MCCANTS

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Abstract

Completely random and randomized block designs involving n factors at each of two levels are used to screen for the effects of a large number of factors. With such designs it may not be possible either because of costs or because of time to run each treatment combination more than once. In some cases, only a fraction of all the treatments may be run. With a large number of factors and limited observations, even one outlier can adversely affect the results. Robust regression methods are designed to down-weight the adverse affects of outliers. However, to our knowledge practitioners do not routinely apply robust regression methods in the context of fractional replication of 2^n factorial treatment structures. The purpose of this report is examine how robust regression methods perform in this context.

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Chapter 1 - Robust Regression

Robust regression is an alternative to the least squares method when there may be outliers in the data or data come from distributions that have heavy tails. Robust regression is less susceptible than least squares to large deviations in the data which can affect computed coefficients, standard errors, and tests of hypotheses. This paper will focus on the performance of a robust method of estimation called M-estimation first introduced by Huber (1964).

Suppose we have the general linear model

$$\mathbf{Y} = \mathbf{X\beta} + \mathbf{\epsilon}$$

where $\mathbf{Y}$ is an n×1 vector of observations, $\mathbf{X}$ is an n×p matrix of coefficients, $\mathbf{\beta}$ is a p×1 vector of parameters and $\mathbf{\epsilon}$ is an n×1 vector of independent and identically distributed errors with mean 0 and standard deviation σ. Let e_i denote the ith element of $\mathbf{Y} - \mathbf{X\beta}$. The method of least squares chooses as estimates of $\mathbf{\beta}$ the values that minimize $\sum_{i=1}^{n} e_i^2$. M-estimates are chosen to minimize an objective function of the form $\sum_{i=1}^{n} \rho(e_i)$ for an appropriately chosen function $\rho(e)$. We will use the Huber estimate for which the objective function is

$$\rho(e) = \begin{cases} .5e^2 \,, |e| \le k \\ k|e| - .5k^2 \,, |e| > k \end{cases}$$

This function is quadratic for e between –k and k, and linear otherwise. Thus it places less weight on observations that have big values of $|e_i|$ than does the squared error objective function. The value of k that is typically chosen is k = 1.345σ which is a value that gives good results for normally distributed errors.

1.1 – Proof of concept

For proof of concept we will examine a simple example comparing estimates from robust and least squares regression methods. We consider one factor at two levels with N = 10 replications and the following situations: no treatment effect and no outlier, no treatment effect and one outlier, treatment effect and no outlier, and treatment effect and one outlier. Each

situation was simulated 1000 times, and average coefficients, standard errors, p-values, and the estimated power for each method. Throughout the report, power will refer to the probability of rejecting the null hypothesis. It is understood that under the null hypothesis of no effect, power is the same as the probability of type I error. For all analyses in this report the statistical program R was used. Results are summarized in Table 1.1.

Table 1.1 – Table of estimates from proof of concept

Situation	Method	Beta	SE	p-value	Power
1	Least squares method	-0.0048	0.306	0.499	5.1%
	Robust Regression	-0.0011	0.308	0.487	7.1%
2	Least squares method	0.519	0.578	0.431	2.3%
	Robust Regression	0.227	0.398	0.490	6.2%
3	Least squares method	0.995	0.306	0.039	77.6%
	Robust Regression	0.999	0.308	0.043	76.1%
4	Least squares method	1.719	0.757	0.068	47.7%
	Robust Regression	1.227	0.398	0.041	76.4%
Situation 1: No treatment effect, no outlier Situation 2: No treatment effect, one outlier			Situation 3: Treatment effect, no outlier Situation 4: Treatment effect, one outlier		
Beta, SE, and p-value are averages computed from 1000 iterations of both tests for each situation.					

Situations one and two were run with group means set to zero and standard deviations equal to one. The only difference was that in situation two, group two contained an outlier which increased an observed value by five.

Examining the results shown in Table 1.1, the differences between the two methods are minimal when there is no outlier present in the data. The largest difference is between the computed powers which shows that Huber's power is about 2% larger than least squares. When an outlier is introduced into the data the differences between the two methods are more drastic. Both methods show an increase in their beta coefficient and standard error estimates, but the increases were much larger for least squares estimates than Huber's. Least squares estimates for standard error increased by 0.275 across the two situations which was almost three times larger than the increase in our robust procedure.

When examining the power across the two methods it shows similar findings as before, but decreasing. Both methods saw a decrease in power, but least squares decreased at a much faster rate than the robust method. Figures 1.1 and 1.2 give a graphic representation of the power and the standard error estimates for each method across the two situations.

Figure 1.1 – Power estimates for situations one and two
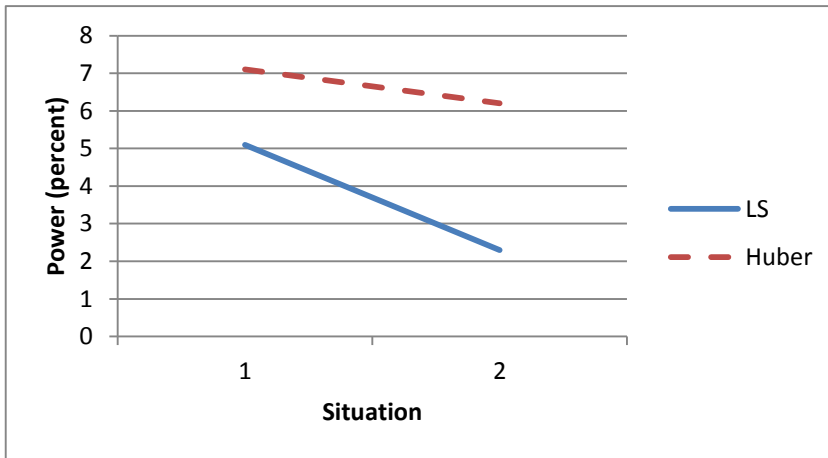
Figure 1.2 – Standard error estimates for situations one and two
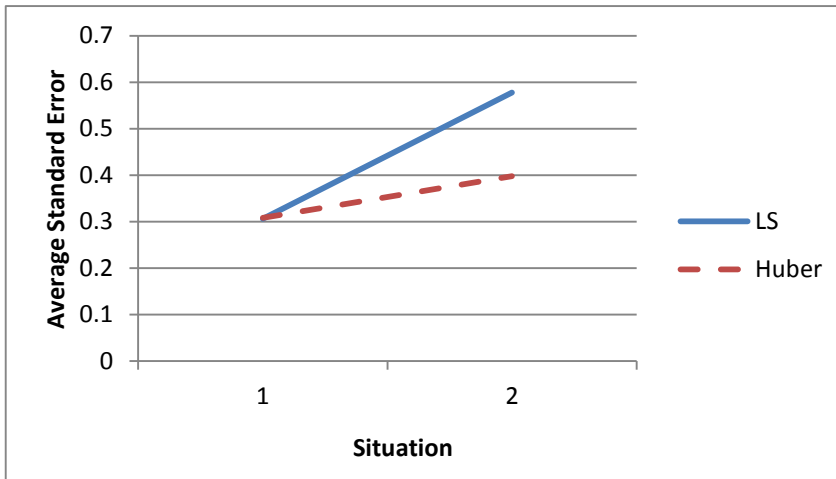
Situations three and four were similar to the first two situations but had group means differ slightly to force a treatment effect. The mean of group two is set equal to two for situations three and four, and situation four has an outlier which increased an observed value in group two by five. Just like situation one, when there is no outlier present the methods are doing a fairly similar job and the power for the least squares was found to be only 1.3% larger.

When there is an outlier we see a much more drastic change in the least squares method compared to no outlier. Overall we see large increases in the beta coefficient and standard error and a large decrease in power when looking at the difference between situation three and

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situation four. However in the robust method we see a relatively small change in our computed values between situations three and four. Figures 1.3 and 1.4 give a graphic representation of the power and the standard error estimates for each method across the two situations.

Figure 1.3 – Power estimates for situations three and four
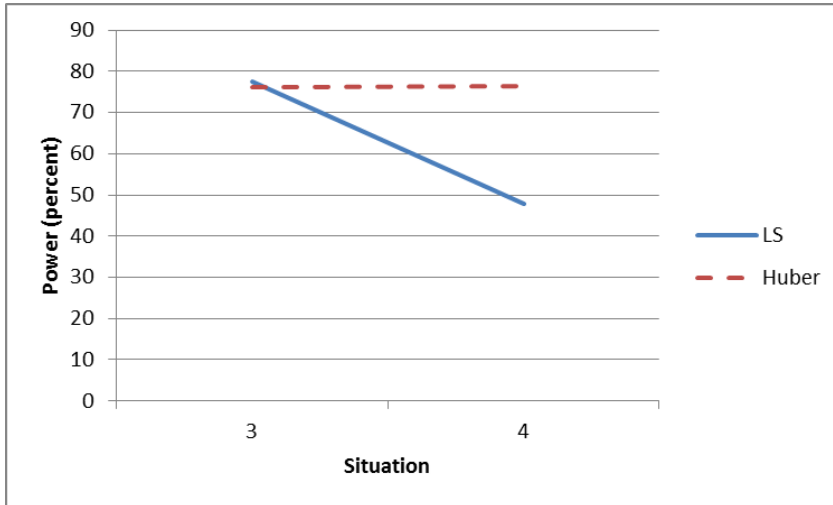
Figure 1.4 – Standard error estimates for situations three and four
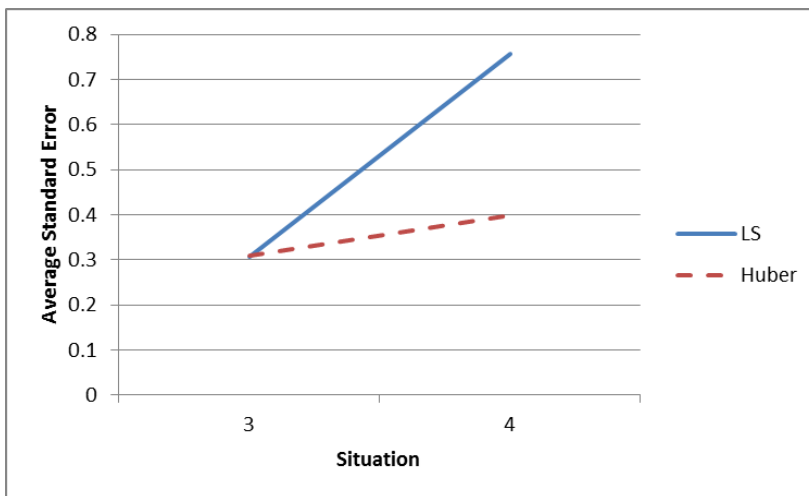
Based on this simple example it is fairly clear to see how the robust and least squares methods react when there is one outlier in the data in the single factor case. When there are no outliers, both tests perform about equally well with the least squares method doing slightly better. However when a single outlier is introduced into the data the estimates for the least

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squares methods change much more than those for the robust method which shows that the robust method, as expected, is more resistant to the presence of an outlier than is the least squares method.

Chapter 2 - Fractional Factorial Designs

Experimenters who wish to examine multiple treatment factors but lack the time, resources, or various other reasons to reach the number of experimental units for a full factorial typically have two choices. They may keep a full factorial design by removing factors or levels of factors from the study or to use a fractional factorial design. Both options will allow for the allotted experimental units but the fractional factorial allows the experimenter to still examine all important factors. Typically fractional designs are seen as advantageous when the number of treatments required exceeds resources, information is required only on main effects and low order interactions, screening studies are needed to check on many factors, or an assumption is made that only a few effects are important (Kuehl, 2000).

For this report we examine the half-replication of a completely randomized design in which each factor appears at two levels which we refer to as a Half-Rep design. This design uses half the number of experimental units that would normally be needed for a full factorial. Later in this section we will examine an experiment with six factors, all with two levels. For a full factorial design denoted as 2^6, we would need to have a total of 64 experimental units, where as a Half-Rep design denoted by 2^{6-1} uses 32 units for the same number of factors.

In a Half-Rep design each effect (main effect or interaction) is confounded with another effect called its alias. As a consequence, for instance, if you see a significant main effect, you cannot verify if the effect is caused by the main effect or its confounding interaction. The alias structure of a Half-Rep design depends on the contrast that is used to define the half-replication. We will use the highest order interaction as the defining contrast. With such a design involving 6 factors, main effects are aliased with five factor interactions, two factor interactions are aliased with four factor interactions, and three factor interactions are aliased with other three factor interactions. The table below gives a brief example of alias calculations for a half-replication of a 2^6 factorial.

Table 2.1 – Alias calculations

Effect	Alias Calculation	Results
Main effects (A)	A * ABCDEF = BCDEF	Main effect A is aliased with the five factor interaction BCDEF.
Two factor interactions (AB)	AB * ABCDEF = CDEF	The two factor interaction AB is aliased with the four factor interaction CDEF.
Three factor interactions (ABC)	ABC * ABCDEF = DEF	The three factor interaction ABC is aliased with the three factor interaction DEF.

While it is possible to employ fractional designs for a minimum of 2 variables, it doesn't appear to be of any real benefit until there are three or more factors. At three factors or more, main effects are aliased with higher level interactions. If it's determined that main effects and two-factor interactions are important, then a minimum of 5 factors are needed to be sure that none of the two-factor interactions are aliased with one another. The table below examines alias structures and computed sample sizes needed for a full factorial and the Half-Rep fractional factorial designs.

Table 2.2 – Alias structure

Design	Usefulness	Full (N)	Half Fraction (N)
2^{2-1}	Main effects aliased with other main effects	4	2
2^{3-1}	Main effects aliased with two-factor interactions	8	4
2^{4-1}	Main effects aliased with three-factor interactions Two-factor interactions aliased with two-factor interactions	16	8
2^{5-1}	Main effects aliased with four-factor interactions Two-factor interactions aliased with three-factor interactions.	32	16
2^{6-1}	Main effects aliased with five-factor interactions Two-factor interactions aliased with four-factor interactions. Three-factor interactions aliased with other three-factor interactions.	64	32

2.1 - Fractional factorial example

For our example we will look at the data from problem 13.38 in Miller and Freund's Probability and Statistics for Engineers 6th edition, by Richard A Johnson. In this example researchers were concerned with observing how effective combinations of six insecticides were at killing insects. The response was the average life span of ten insects after exposure. For this example we will examine the differences between least squares and Huber's robust method using a model fitting main effects and two factor interactions.

We begin by checking our assumptions to see if least squares regression is appropriate in this context. Figure 2.1 is a plot of the standardized residuals by the fitted values where lines indicate points where values would be three standard deviations above or below the mean. There do not appear to be any noticeable trends or shapes in the plot to suggest a bad model or unequal variances but there are two outliers in the data, one positive and one negative that could potentially affect our analysis. Based on the histogram and the normal quantile plot in Figure 2.2, the data appears to be fairly well behaved and don't appear to deviate largely enough from normality to be considered non-normal.

Figure 2.1 – Plot of residuals by fitted values

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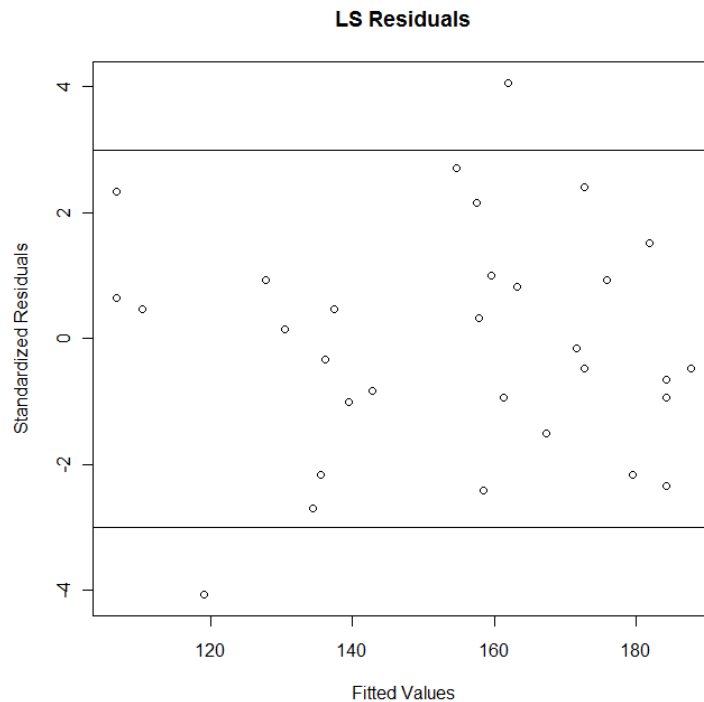
Figure 2.2 – Histogram and normal quantile plot

Histogram of life

life

Normal Q-Q Plot

Theoretical Quantiles
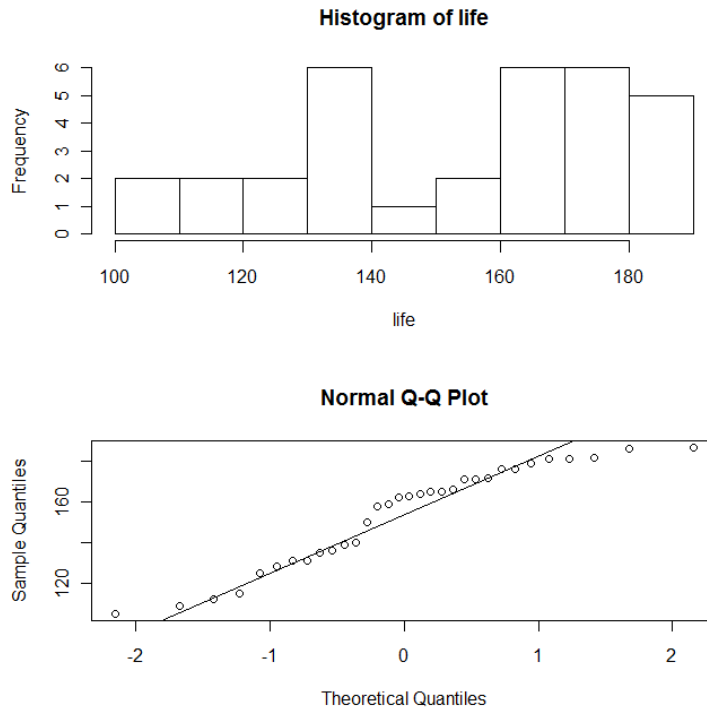
For comparison, we look at these types of plots from a robust perspective. When we look at the corresponding plots, we see that there are some noticeable differences between the two methods. Figure 2.3 compares the histograms of the residuals for both methods. While the robust method has single residuals that are larger than the LS method, overall it has more residuals closer to zero than with least squares. We can also see in Figure 2.4 that the distribution of residuals for robust regression appears to be more normally distributed than the least squares residuals.

Based on the diagnostic plots, the researchers would have some choices to make in terms of analysis. One would be to ignore the outliers and do the least squares analysis. Another would be to remove the outliers from the data and do a least squares analysis. However, if the outliers are not mistakes or if it is not known whether they are mistakes, then the researchers might prefer to leave them in the analysis to get the most information possible from every experimental unit. Therefore, the researchers might choose to down-weight the effect of the outliers by using a robust method. Hence we'll move forward based on the assumption that the researchers would typically employ either least squares analysis on all the data or use a robust method.

Figure 2.3 – Histograms of residuals

Least Squares

Robust (Huber)
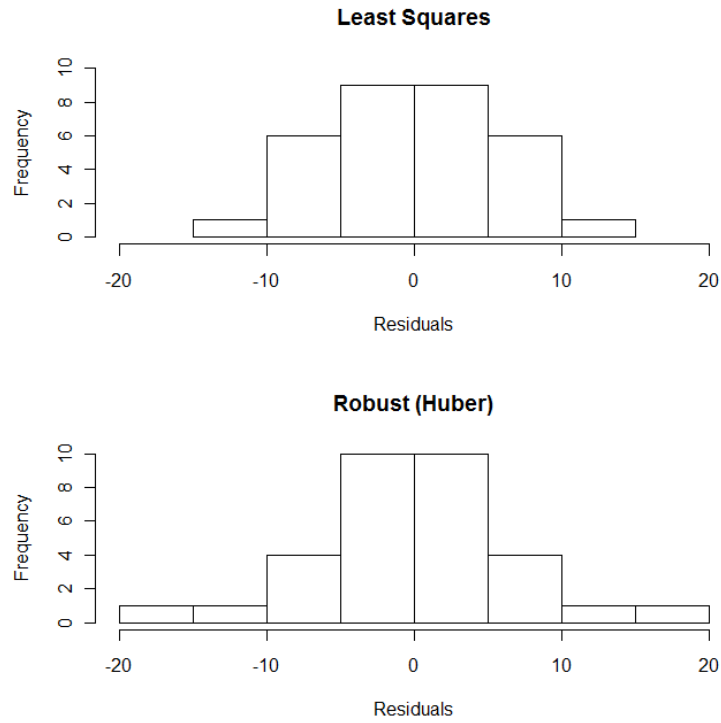
Figure 2.4 – Normal quantile plots of residuals

Normal Q-Q Plot

Theoretical Quantiles
Least Squares

Normal Q-Q Plot

Theoretical Quantiles
Robust (Huber)
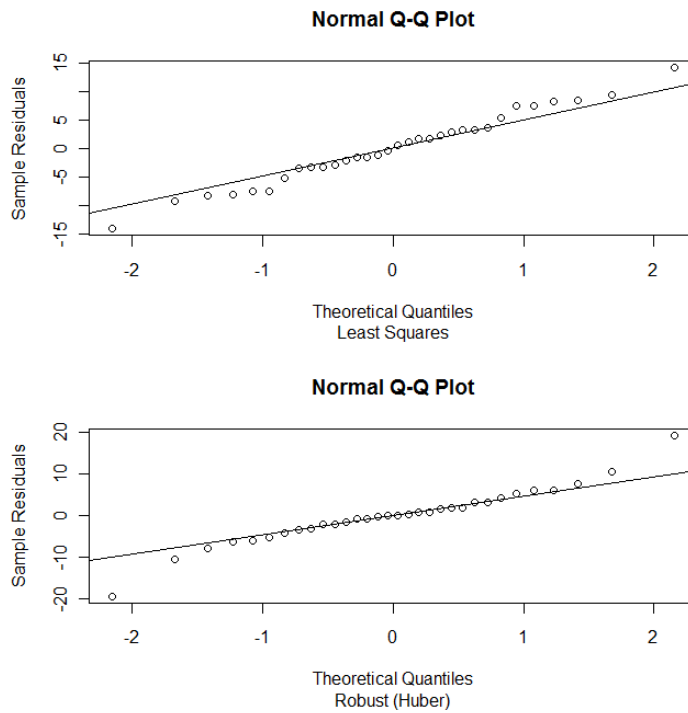
Tables A.1.1 and A.1.2 in Appendix A compare different aspects of the fits of the two methods. The standard errors of the coefficients for the robust method is .097 less that the standard errors of the least-squares method, which is about a 5% reduction. There are some small differences in p-values for the various effects. In particular the D:E interaction goes from being marginally insignificant at the 5% level for the least squares method (p = .053) to being marginally significant (p = .044) for the robust method. In the proof of concept, outliers in the least squares method inflated the standard errors more than the they did for the robust method, and that is true in this example. If this holds true in general, then outliers could affect the ability of the least squares method to identify true significant main effects and interactions, but this might be overcome by using a robust method.

In Chapter 3, we will use simulation to examine how each method reacts to outliers in the data when the data are from a Half-Rep of a 2^6 factorial.

Chapter 3 - Simulation of fractional factorial

To help determine what influence outliers have on the analysis of a Half-Rep of a 2^6 factorial, we simulated data from the model

$$\hat{y} = 153.75 - 2.62(C) - 2.63(E) + 2.56(F) - 2.5(CE) + 1.31(CF) - .68(EF) + e,$$

with $e \sim N(0,11)$. The non-zero terms are the same as the fitted coefficients for the least squares model in Chapter 2 and the same mean square error. The other terms were set to zero in the simulation even though they were not zero in the fitted model. This was done to look at the effect of outliers on estimates of both non-zero and zero coefficients. Outliers were added to the data in various patterns as described below. The model fitted to the simulated data included all 6 factors with their main effects and two-way interactions. Each outlier scenario was simulated 1000 times. Average beta coefficients, p-values, standard errors, and power for least squares and Huber's method for all main effects and two factor interactions were obtained.

An outlier was obtained as follows. Data were generated from a Half-Rep with no outliers. The mean and standard deviation SD of the 32 observations were computed. A value of mean ± k×SD, k = 3, 4, 5, replaced one or more simulated values. The data were then analyzed

with the outliers in the data. The observations selected for outliers were either fixed in advance or selected randomly. Scenarios contain up to three outliers.

The following scenarios were considered for fixed outliers: 1, 2 or 3 positive outliers; 1 positive and 1 negative outlier; 2 positive and 1 negative outlier. The observation numbers used were arbitrarily chosen as 29, 12, and 13. For the scenarios involving randomly selected outliers, the number of was either 1, 2, or 3 as with fixed outliers. However, unlike the fixed outlier scenarios, the choice of a positive or negative outlier was determined to be the same as the sign of the original residual.

The results for outliers are extensively tabulated in Tables B.1.1 – B1.12, B2.1 – B2.8, and B3.1 – B 3.8 and Tables C1.1 – C1.2 , C.2.1 – C2.8, and C3.1 – C3.8. The B-Tables show the differences between estimates when there are no outliers and the corresponding estimates when there are outliers. We call these tables "biases". For instance, for the coefficients, these are simulated biases in the usual sense of biased estimates. For standard errors, p-values, and power, these biases indicate how much the outliers have affected the results compared to no outliers. What one would expect is outliers would not bias results as much with Huber's method as with the least squares method. The C-tables contain the actual average simulated values from which biases in the B-tables were obtained.

Related to the effect of outliers is the question of the effect of heavy- tailed error distributions have on the performance of the estimates. To investigate this question, the last simulation looked at how the two methods differed using errors that have t-distributions with varying degrees of freedom ranging from 3 to 40. The smaller degrees of freedom have heavier tails than the normal distribution, and the distributions become like the normal as the degrees of freedom increase.   For this part of the study observations were randomly selected with no outliers using the model

$$\hat{y} = 153.75 + 0.62(C) - 0.5(E) + 0.5(CE) + e.$$

This model was chosen so that the powers for the two methods for non-zero coefficients would be around .50. These results are in Tables D1.1 – D1.6.

3.1 – Results for Outliers

The following discussion of the simulations will concentrate on the main effects A and E, and the interaction terms AB and CE. The focus of the analysis will be the stability, or lack of stability for least squares and Huber's methods as outliers increase in distance. We will define "outlier bias" or "bias" to mean the difference between the expected value of the quantity of interest when there is an outlier and its expected value when there is not. The expected values are estimated by simulation. In our model A and B are equal to zero while C and E are both nonzero coefficients. Results for other effects are similar.

Coefficients:

Of interest here are the differences between the simulated biases of the estimates when outliers of size 3, 4, or 5 standard deviations are included in the data. To determine simulated biases, the averages of the estimated coefficients for 1000 simulations were obtained and differences from the true parameters were computed. There were no differences in the biases for interaction and intercept terms between methods. We checked this rather peculiar result using both R and SAS code, and it appears to be correct. There were differences in biases observed in the main effect estimates.

In the one outlier case, the biases increased at a greater rate for the least squares estimates than those for their Huber counterpart as the size of the outlier increased. Figure 3.1 shows the bias for estimates with outliers that were three, four, and five standard deviations away. With one outlier at three standard deviations away, main effect A saw a bias of -1.061 for Huber and -1.505 for least squares. When the outlying observation is then placed at five SD's away those biases are now -1.125 for Huber's and -2.271 for least squares.

With a second outlier, bias is dependent on the direction of the outliers. Figure 3.2 shows that when the outliers are both positive, the significant main effect E has about the same bias for both methods. The non-significant main effect A shows that the bias of Huber's method remains relatively constant but least squares bias continues to increase negatively as the outlier distance increases. In Figure 3.3 in which one of the two outliers introduced is negative, the effect of the bias is opposite way that was seen previously when they were both positive. The bias for the non-significant main effect A remains steady across both methods while the bias for the significant main effect E continues to increase. The pattern for three outliers shown in Figures

3.4 and 3.5 is similar to that for one and two outliers. Depending on the parameter, the bias of the two methods are either about the same or Huber's method has smaller bias than least squares as the size of the outlier increases. In the case of two positive and one negative outlier (Figure 3.5), there appears to be little difference between the two methods. This would indicate that the robust method cannot overcome too many outliers in opposite directions. Figure 3.6 shows the bias for two random outliers in the data, which is also consistent with previous results shown above.

Figure 3.1 – Coefficient bias for simulation with one fixed positive outlier
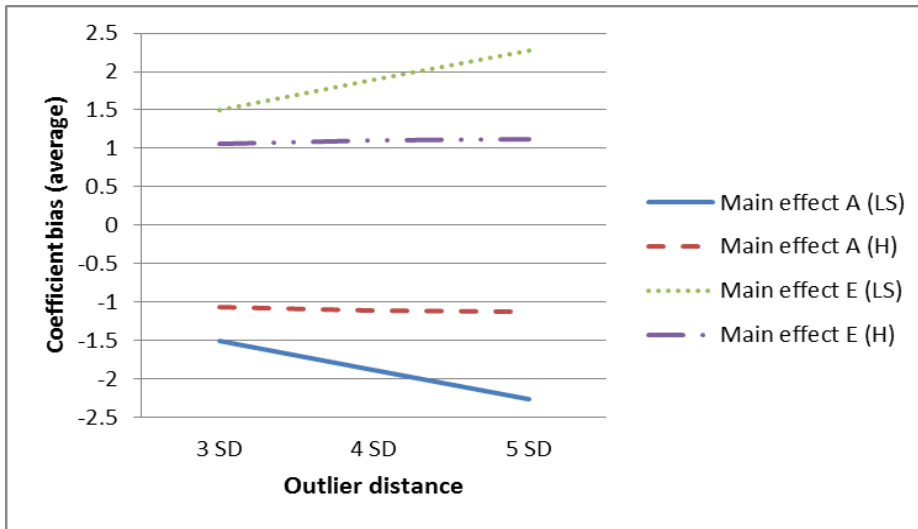
Figure 3.2 – Coefficient bias for simulation with two fixed positive outlier
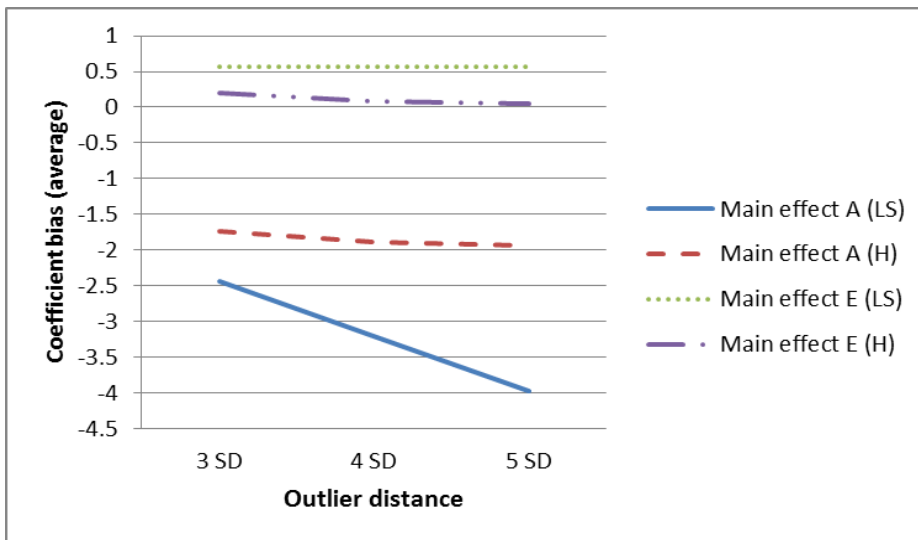
Figure 3.3 – Coefficient bias for simulation with two fixed outliers, one positive and one negative
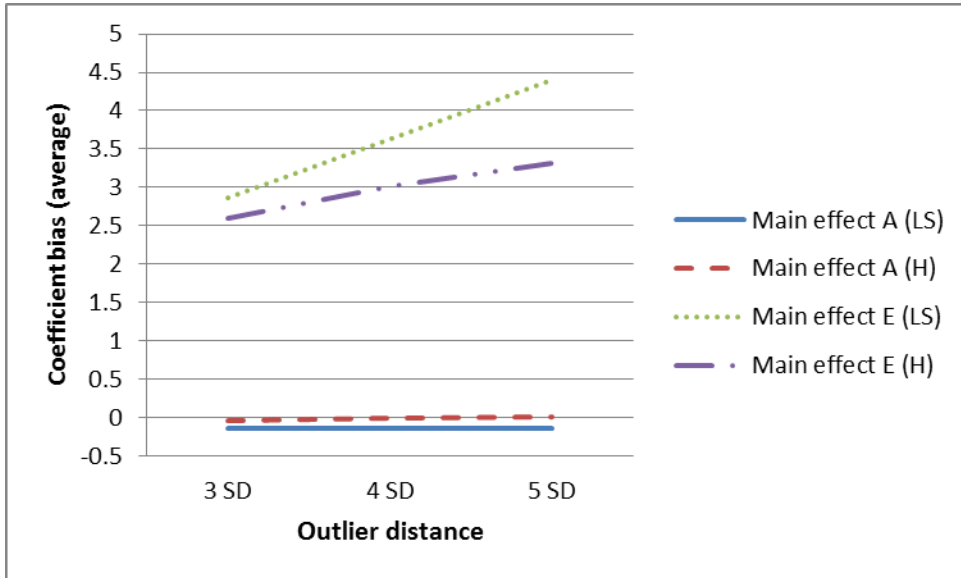
Figure 3.4 – Coefficient bias for simulation with three fixed positive outliers
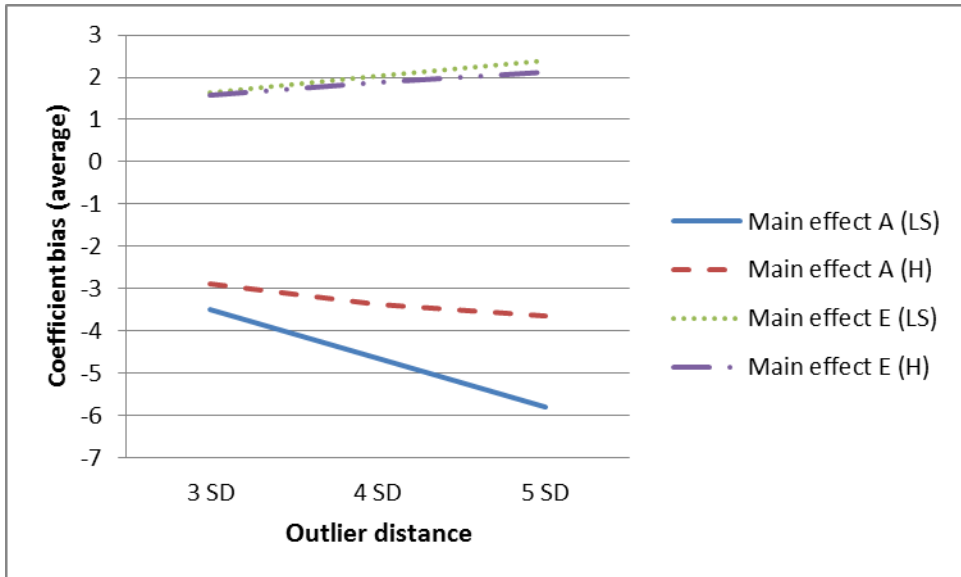
Figure 3.5 – Coefficient bias for simulation with three fixed outliers, two positive and one negative
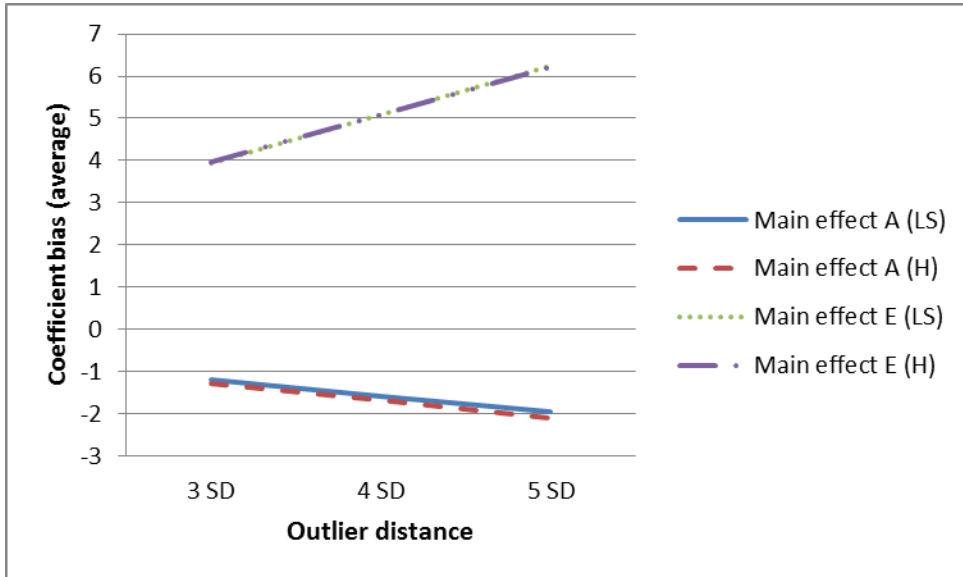
Figure 3.6 – Coefficient bias for simulations with two random outliers.
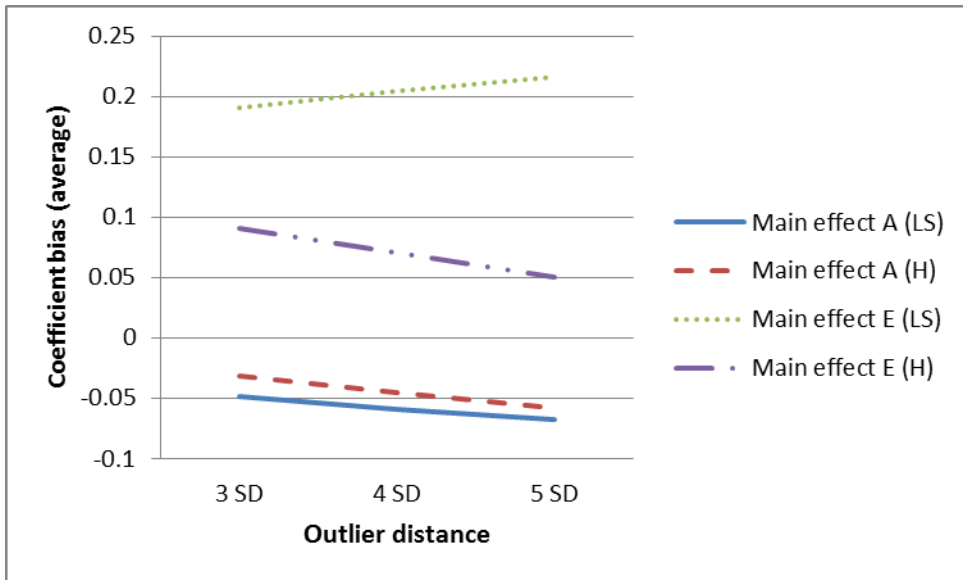
Standard Error:

When examining the average standard errors of the best coefficients estimates, generally speaking Huber's standard error estimates tended to have less bias than least squares standard errors when all outliers were positive and fixed or were randomly placed into the data. Typical results are shown in Figures 3.7 and 3.8. However, when there were mixed positive and negative outliers, the biases of the standard errors of the two methods were comparable. A typical result is shown in Figure 3.9.

Figure 3.7 – Standard error bias for simulations with one fixed positive outlier
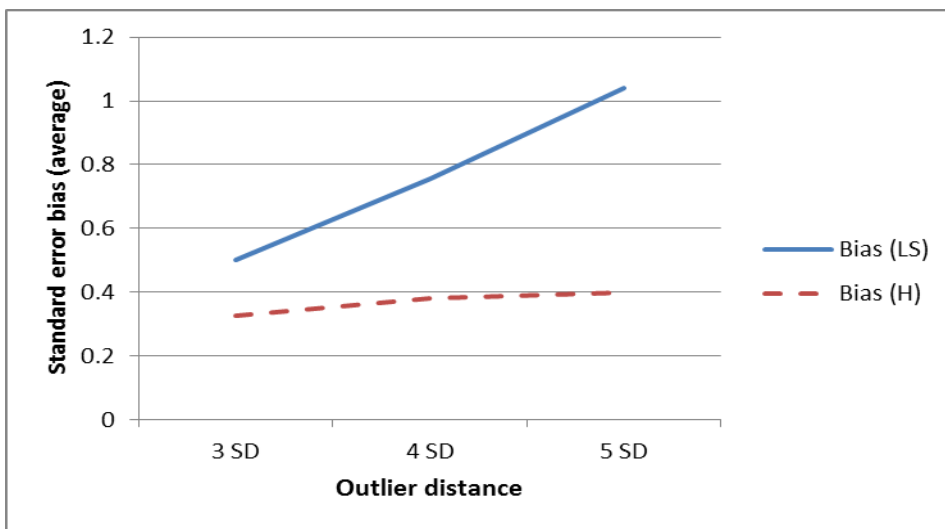
Figure 3.8 – Standard error bias for simulations with two random outliers
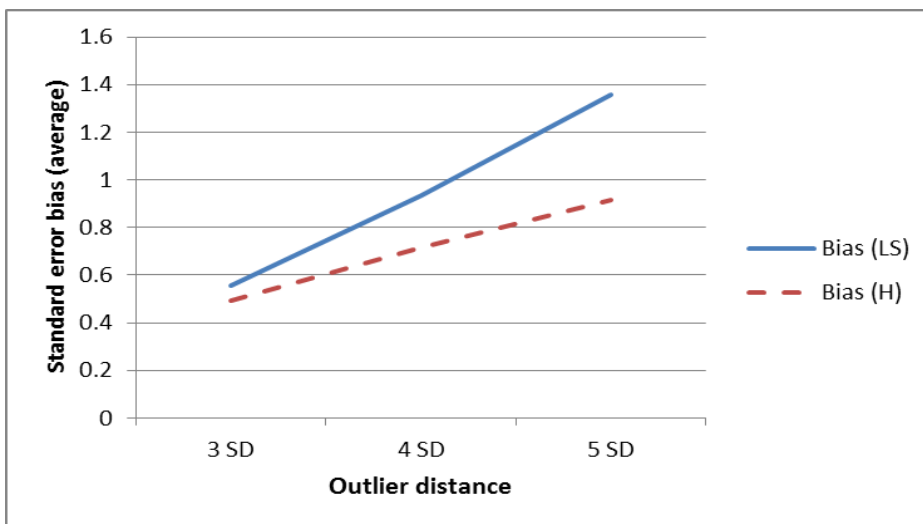
Figure 3.9 – Standard error bias for simulations with two fixed outliers, one positive and one negative
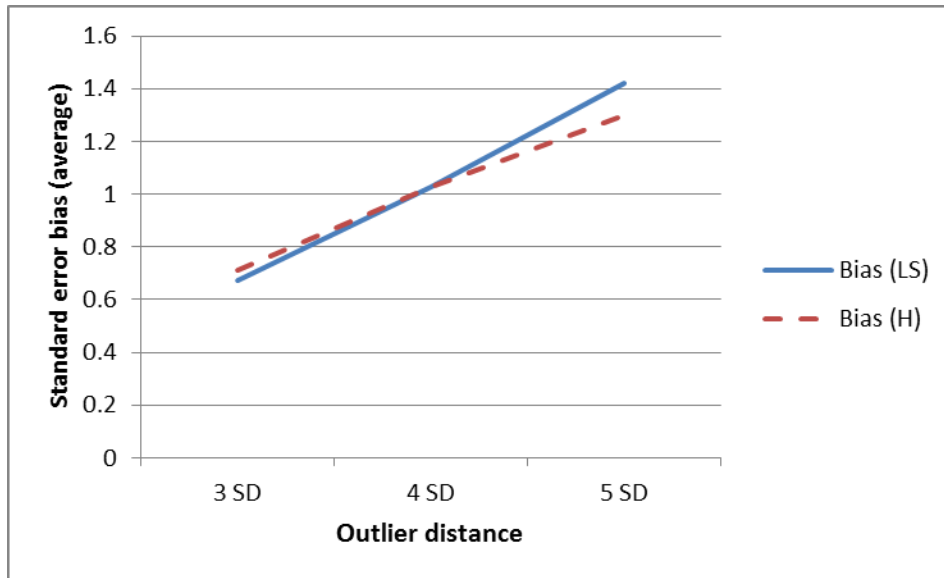
P-Values:

When examining the tables for p-value bias, there doesn't appear to be any general trend across all coefficients. In the case of one outlier at three SD's there appears to be three general groupings for the biases. For the main effects the differences between the biases of Huber and least squares were 0.008, 0.008, and 0.006 for main effects A, D, and B (those whose population values are 0) , and -0.093, -0.083, and -0.081 main effects C, E, and F (those whose coefficients are non-zero). For all the two factor interactions we saw differences between the two methods range from -0.022 to -0.027.   As outliers increased in distance the values become larger, but stayed in this 3 grouping format.

Power:

The last component examined for these simulations will be the biases in computed power. In general all the situations appeared to show the same trends regardless of the simulation methods used, which is when there are outliers in the data least squares power estimates were affected much greater than Huber's.

Examining the main effects in Figure 3.10 below, we see both methods show minimal bias for main effect A, but we see a much more visible bias in effect E. The bias for Huber's method tends to stay relatively constant after the initial shift while least squares shows a small negative slope in bias for both main effects A and E. The interaction biases shown in Figure 3.11 behave fairly similar to the main effects biases shown in figure 3.10. Both methods again decrease quickly for the C:E interaction effect, and then level off with minor negative slopes in bias as the outlier distance grows. For the non-significant interaction A:B, both methods produced rather unbiased results initially, but as the outlier distance grows Huber's method has a positive slope in bias while least squares is producing results that have a negative slope.

Figure 3.10 – Power bias for main effects with one fixed positive outlier
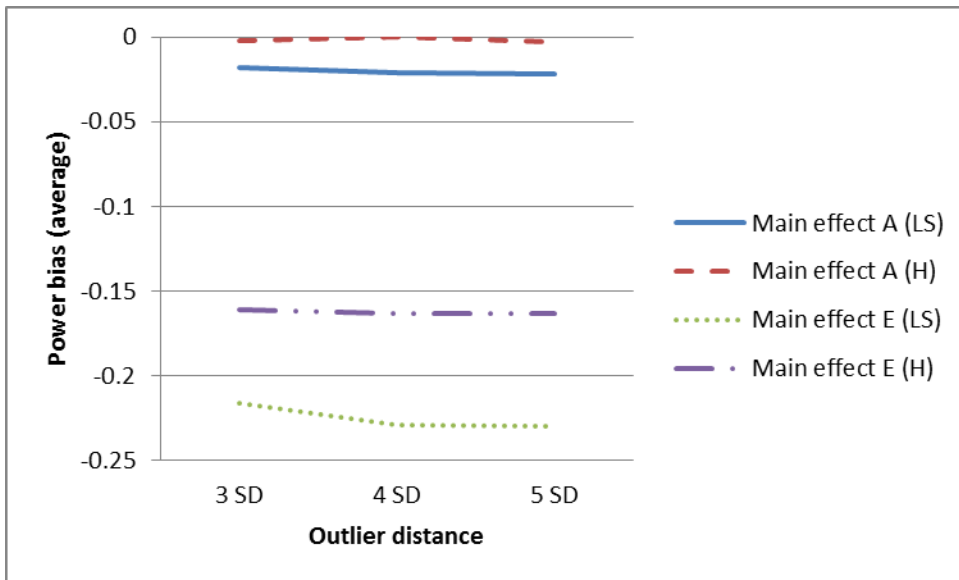
Figure 3.11– Power bias for interaction effects with one fixed positive outlier
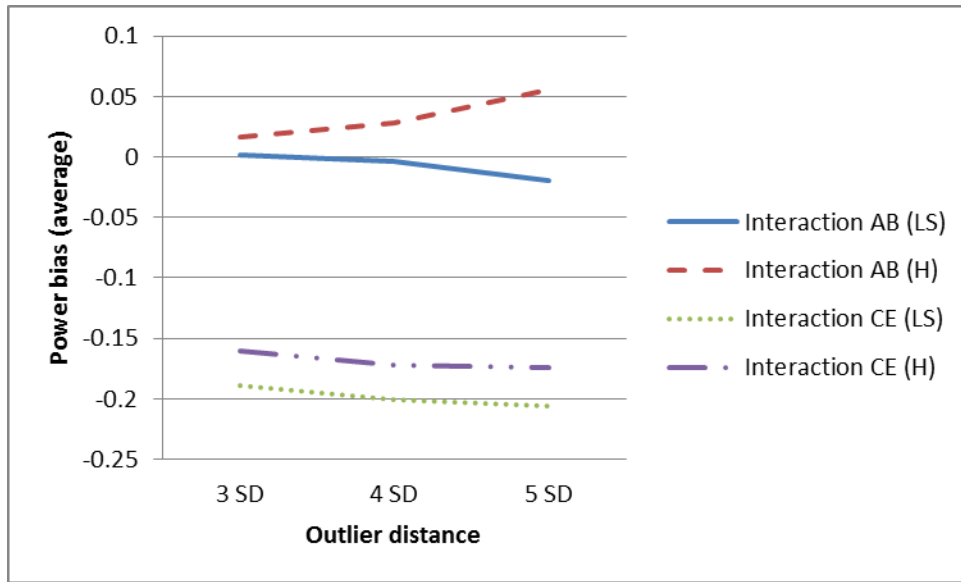
In the case of two outliers, the direction of the outlier seems to have a significant influence on the bias for the non zero effects in model. Figure 3.12 and 3.13 show the bias for main effects where two fixed outliers were present. In Figure 3.12 with two positive outliers there are very small biases for both methods concerning coefficients set to zero and a rather large difference in regards to the non-zero coefficents as seen previously. In Figure 3.13 where one of the outliers was negative, the bias seen for the non-zero coefficients are virtually identical between both methods. Figures 3.14 and 3.15 are also included to show the power biases for the interaction terms which are almost identical in terms of the changes shown above concerning positive and negative outliers.

Finally, the bias for the random outlier simulation shows a similar picture as the fixed all positive outlier results above shown previously. To illustrate, we discuss the power biases as shown in Figures 3.16 and 3.17. For two randomly placed outliers the non-significant main effect A shows little change for both methods. Main effect E shows initial negative slopes in bias for both methods and both continue the negative slope in bias at about the same rate after that. For the interaction term A:B, least squares power estimates remain fairly unbiased while Huber's increases in bias as outlier distance grows. The non-zero interaction effect shows a fairly equal negative bias for both methods at 3 SD, but Huber's method remains consistent while least squares slope decreases as the outlier distance grows.

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Figure 3.12 – Power bias for main effects with two positive fixed outliers
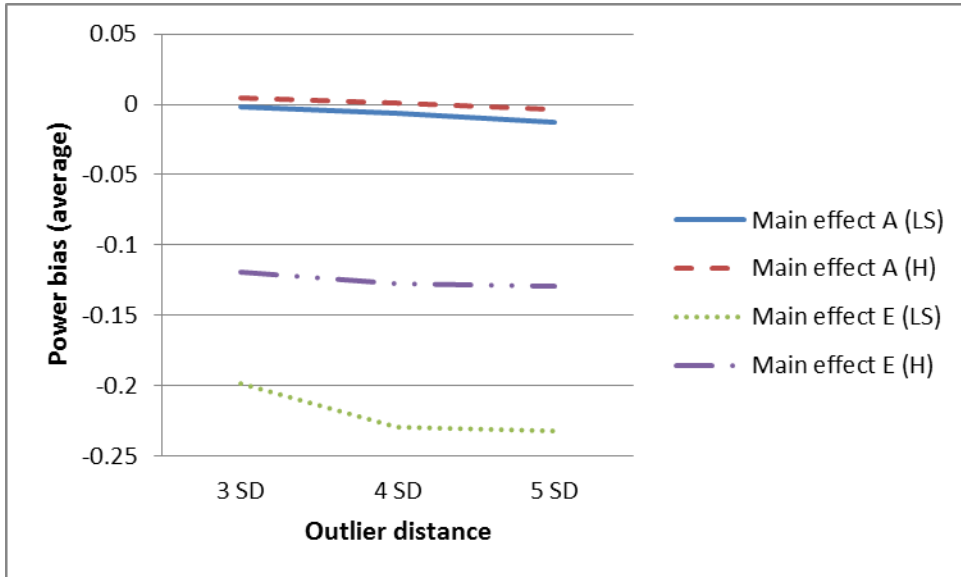
Figure 3.13 – Power bias for main effects with one positive and one negative fixed outlier
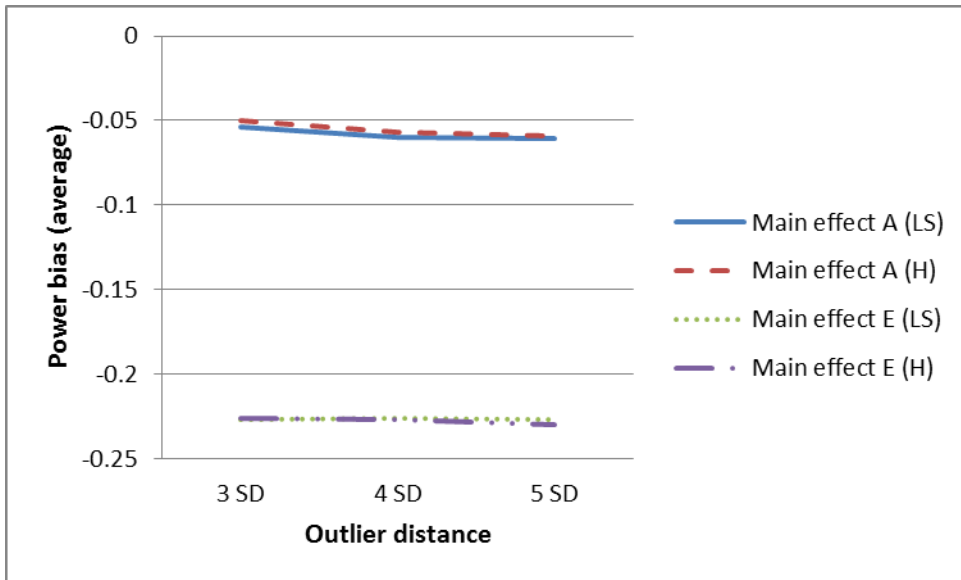
Figure 3.14 – Power bias for interaction effects with two positive fixed outliers
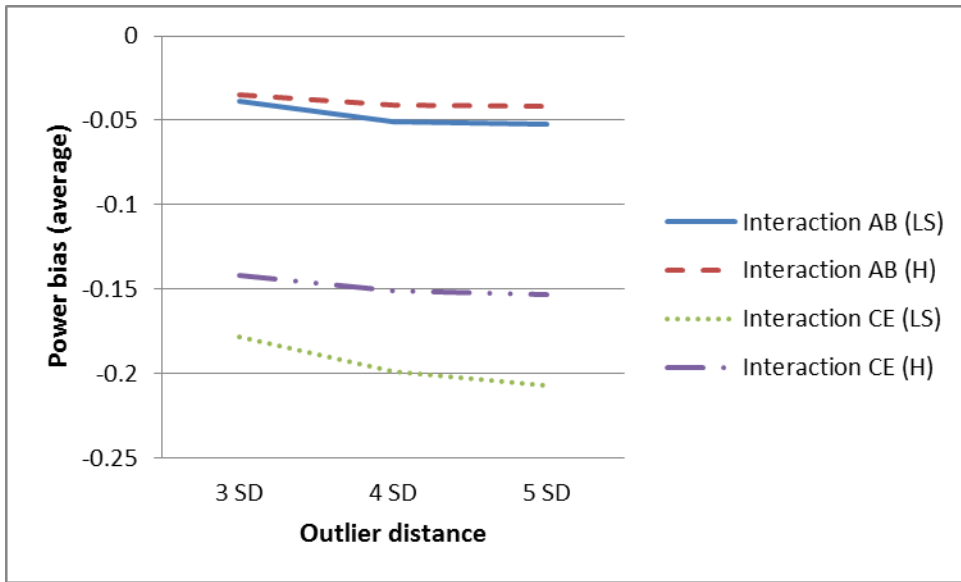
Figure 3.15 – Power bias for interaction effects with one positive and one negative fixed outlier
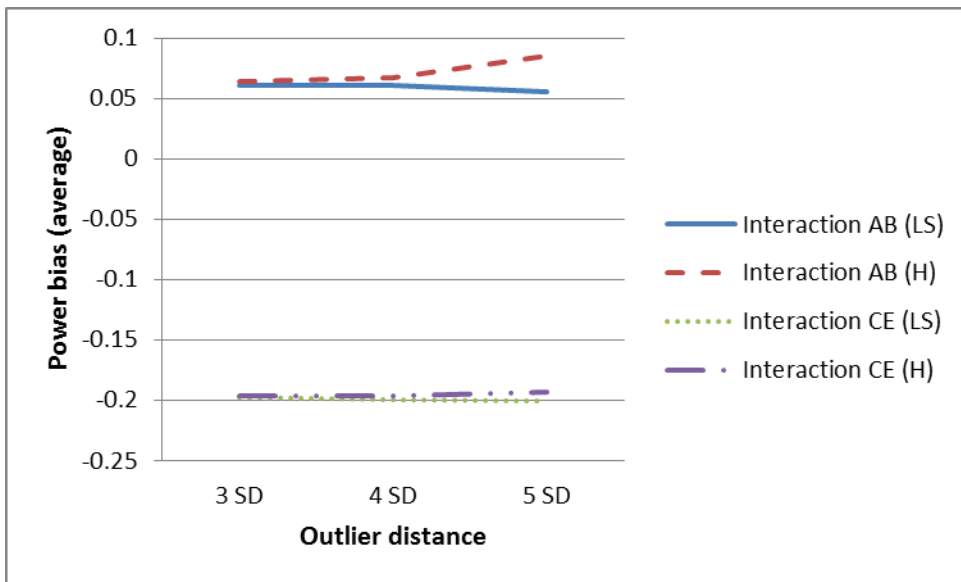
Figure 3.16 – Power bias for main effects with two random outliers
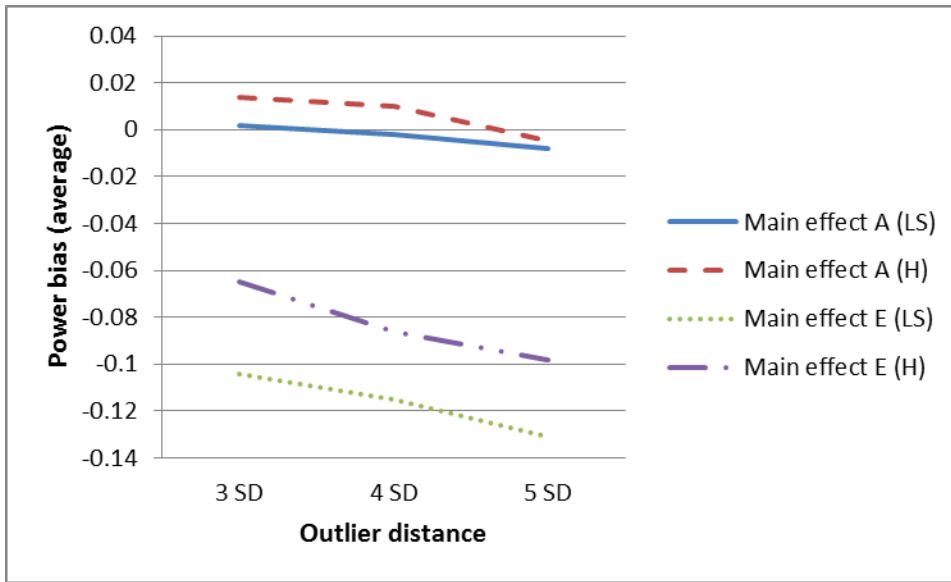
Figure 3.17 – Power bias for interaction effects with two random outliers
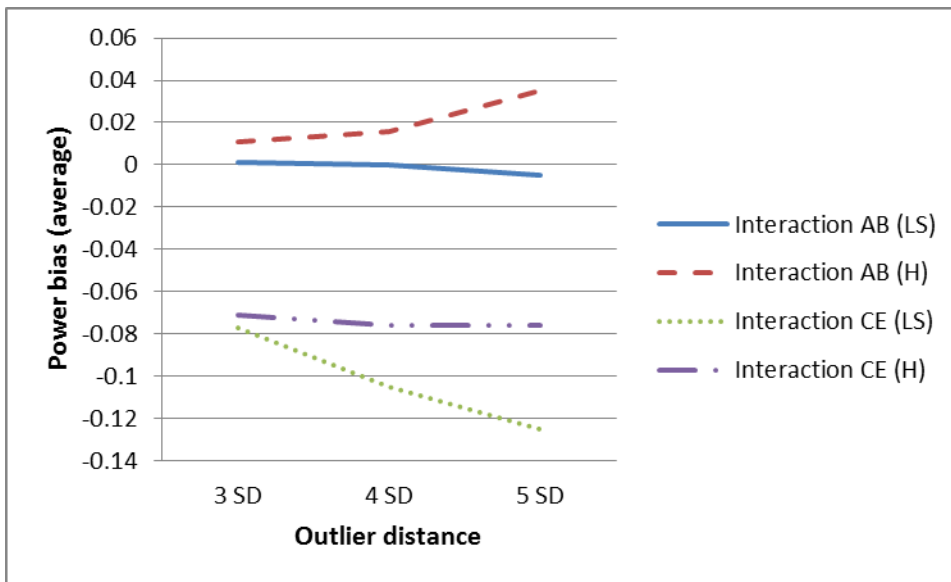
3.2 – Results for Heavy Tail Error Distribution

Results are summarized in tables D.1.1 to D.1.6 in Appendix D. For the standard error of the estimates, Huber's method gives smaller values for t-distributions with fewer DF's and least squares starts to generate lower standard errors around 10 degrees of freedom. Figure 3.12 shows the average estimated standard error computed for each method along, and Figure 3.13 has the range of standard error estimates.

Figure 3.18 – Standard error estimates for T-Distribution
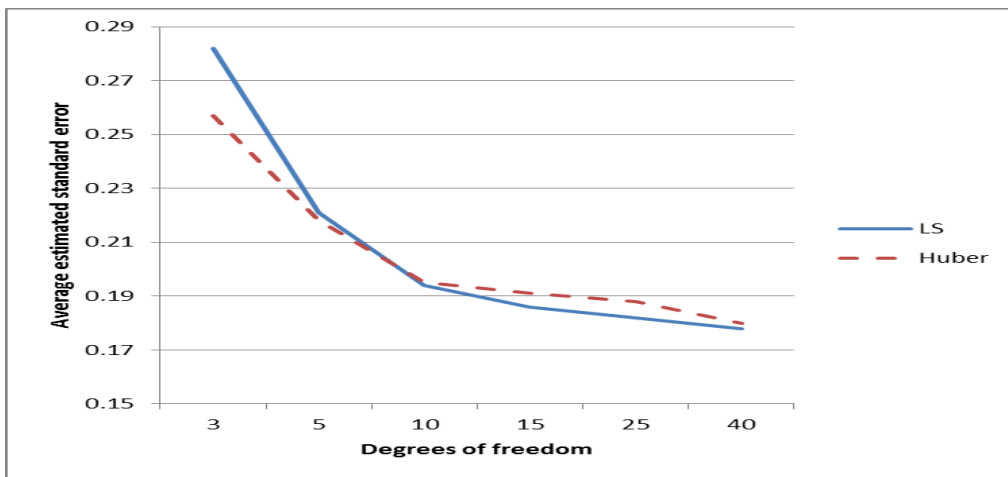
Figure 3.19 – Range of standard error estimates for T-Distribution
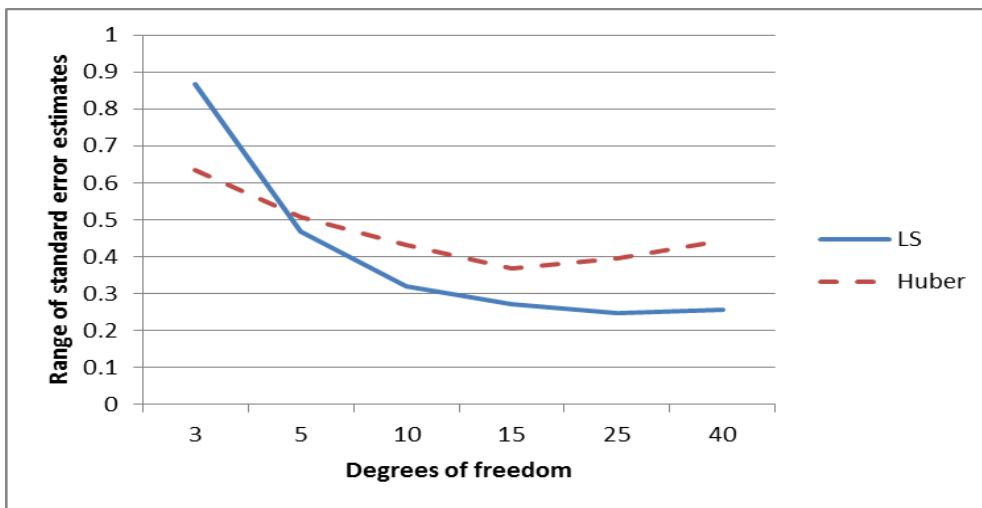
The power for the main and interaction effects, shown in Figures 3.20 and 3.21 also show what we would expect. When there are fewer degrees of freedom, Huber's method is more powerful than least squares for the significant main effects and interactions, but at around five degrees of freedom least squares starts to perform better and achieve larger power estimates from that point on. The power of non-significant main effects and interactions typically hover around the nominal five percent mark and don't fluctuate much as the degrees of freedom are increased.

Figure 3.20 – Power estimates for main effects for T-Distribution
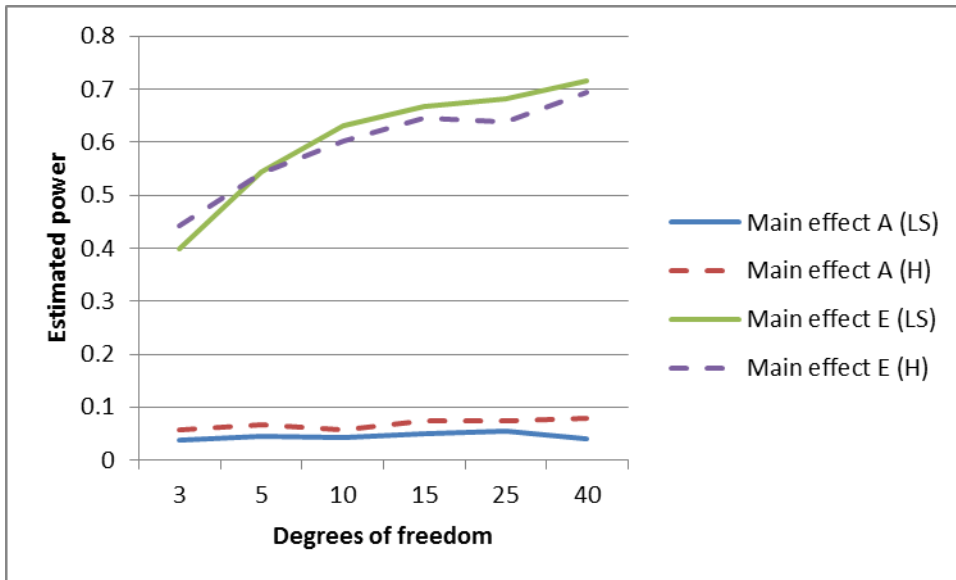
Figure 3.21 – Power estimates for interaction effects for T-Distribution
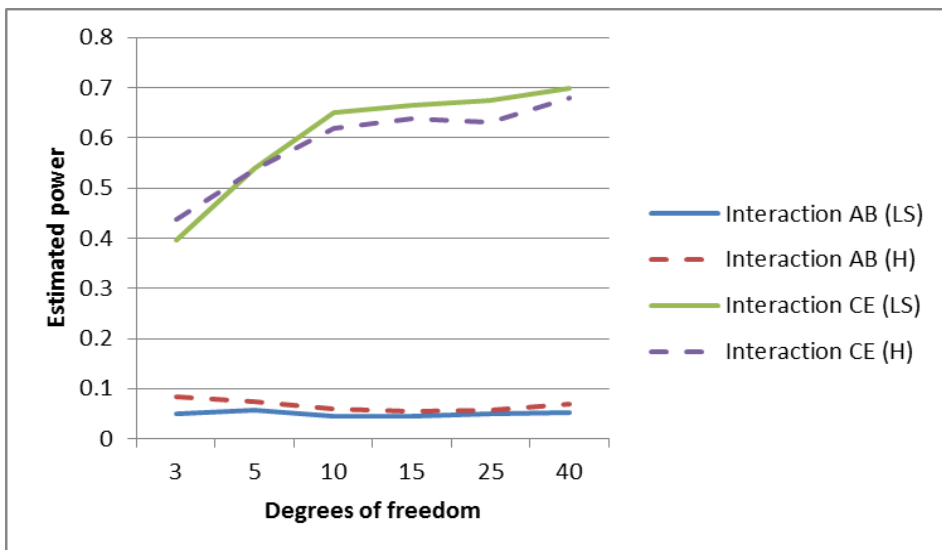
Chapter 4 - Conclusion

Based on the results of the simulations above I would suggest that using Huber's method along with least squares is advantageous to the experimenter in some circumstances. Throughout the simulations when there were no outliers, Huber's method did a fairly similar job compared to the least squares method. Huber's method is generally less affected by a few large outliers than the least squares method, but with smaller outliers, the advantage is not so clear. The pattern of outliers also appears to affect the relative improvement one may get with the Huber's method. With just one large outlier, there were clear advantages to using the Huber's method, but with a pattern of two positive and one negative outliers, there was little advantage of using the Huber's method. In the case of heavy-tailed error distributions with no outliers, the Huber's method performed as we would expect. When the errors had heavier-tailed distributions, Huber's method gave more powerful tests than the least squares method, but as the tails became more like those of the normal distribution, the least squares method had greater power.

While the information presented here does a fairly thorough job of examining how the two methods react to outliers in a particular fractional factorial design, further research would be needed to determine how the two methods react in other contexts. The good news is that with the relative ease of implementation in popular statistical programs the information provided by having results of both methods would help the experimenter better understand what is going on in the data and to determine significant factors for future study.

References

Huber, P. J. (1964), "Robust Estimation of a Location Parameter," *The Annals of Mathematical Statistics*, 35, 73–101.

Kuehl, R.O. (2000). *Design of experiments: statistical principles of research design and analysis*. Duxbury Pr.

Johnson, Richard A., Irwin Miller, and John E. Freund. (1999). <u>Miller & Freund's Probability and Statistics for Engineers</u>. Englewood Cliffs: Prentice Hall.

Appendix A - Chapter two tables

Table A.1.1 – example weights and residuals

Obs	A	B	C	D	E	F	Y	weights (R)	Residuals (R)	Residuals (LS)
1	-1	-1	1	-1	1	-1	181	1	-4.178	-3.25
2	1	-1	-1	-1	1	-1	172	1	-5.184	-7.5
3	1	1	-1	-1	1	1	140	1	-1.947	-2.875
4	-1	1	1	1	-1	1	165	1	5.184	7.5
5	1	-1	1	1	1	-1	139	1	0.697	1.625
6	-1	-1	-1	-1	1	1	186	1	-0.345	-1.625
7	-1	-1	-1	1	1	-1	164	0.819	7.763	9.375
8	1	1	1	1	-1	-1	112	1	0.345	1.625
9	1	-1	1	1	-1	1	162	1	-3.286	-5.25
10	-1	-1	-1	-1	-1	-1	182	1	0.066	-2.25
11	-1	1	-1	-1	-1	1	171	1	-0.697	-1.625
12	-1	-1	1	-1	-1	1	176	1	-6.161	-8.125
13	-1	1	-1	-1	1	-1	187	1	3.286	5.25
14	1	1	1	-1	1	-1	131	1	-0.78	0.5
15	1	1	1	-1	-1	1	125	0.819	-7.763	-9.375
16	1	-1	-1	1	1	1	158	1	-1.97	-3.25
17	-1	1	-1	1	-1	-1	135	1	-3.089	-1.125
18	-1	-1	-1	1	-1	1	171	1	0.78	-0.5
19	1	-1	1	-1	1	1	159	1	3.089	1.125
20	-1	1	1	-1	-1	-1	179	1	1.97	3.25
21	1	-1	1	-1	-1	-1	165	0.605	10.5	7.5
22	-1	1	1	-1	1	1	181	1	6.059	8.375
23	-1	-1	1	1	1	1	163	1	1.536	3.5
24	-1	1	-1	1	1	1	128	0.605	-10.5	-7.5
25	1	1	-1	1	-1	1	131	1	4.178	3.25
26	1	1	-1	-1	-1	-1	136	1	-1.536	-3.5
27	-1	1	1	1	1	-1	105	0.329	-19.333	-14.125
28	1	1	1	1	1	1	109	1	-0.066	2.25
29	1	-1	-1	-1	-1	1	176	0.329	19.333	14.125
30	1	-1	-1	1	-1	-1	150	1	-6.059	-8.375
31	1	1	-1	1	1	-1	115	1	6.161	8.125
32	-1	-1	1	1	-1	-1	166	1	1.947	2.875

Table A.1.2 – example coefficients, standard errors, and p-values

	Coef (LS)	Coef (R)	SE (LS)	SE (R)	P-value (LS)	P-Value (R)
(Intercept)	153.750	153.750	1.964	1.867	0.000	0.000
A	-11.250	-12.232	1.964	1.867	0.000	0.000
B	-13.125	-11.967	1.964	1.867	0.000	0.000
C	-2.625	-1.985	1.964	1.867	0.211	0.313
D	-11.687	-10.705	1.964	1.867	0.000	0.000
E	-2.625	-1.643	1.964	1.867	0.211	0.399
F	2.563	2.098	1.964	1.867	0.221	0.287
A:B	-4.500	-4.500	1.964	1.867	0.045	0.037
A:C	-2.125	-2.125	1.964	1.867	0.305	0.282
A:D	3.687	3.687	1.964	1.867	0.090	0.076
A:E	0.500	0.500	1.964	1.867	0.804	0.794
A:F	-0.063	-0.063	1.964	1.867	0.975	0.974
B:C	0.375	0.375	1.964	1.867	0.852	0.845
B:D	-3.938	-3.938	1.964	1.867	0.073	0.061
B:E	-1.000	-1.000	1.964	1.867	0.622	0.604
B:F	0.562	0.562	1.964	1.867	0.780	0.769
C:D	0.688	0.688	1.964	1.867	0.734	0.720
C:E	-2.500	-2.500	1.964	1.867	0.232	0.210
C:F	1.313	1.313	1.964	1.867	0.519	0.498
D:E	-4.312	-4.312	1.964	1.867	0.053	0.044
D:F	3.750	3.750	1.964	1.867	0.085	0.072
E:F	-0.687	-0.687	1.964	1.867	0.734	0.720

Appendix B - Bias data tables

B.1 – Bias estimates for fixed outliers

Table B.1.1 – Coefficient bias for one fixed positive outlier

	Coefficients - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	1.505	1.505	0.000	1.888	1.888	0.000	2.271	2.271	0.000
A	-1.505	-1.061	0.444	-1.888	-1.11	0.778	-2.271	-1.125	1.146
B	1.505	1.028	-0.477	1.888	1.073	-0.815	2.271	1.09	-1.181
C	1.505	1.028	-0.477	1.888	1.074	-0.814	2.271	1.092	-1.179
D	1.504	1.057	-0.447	1.887	1.103	-0.784	2.27	1.121	-1.149
E	1.505	1.064	-0.441	1.888	1.111	-0.777	2.271	1.127	-1.144
F	-1.504	-1.038	0.466	-1.888	-1.085	0.803	-2.271	-1.103	1.168
A:B	-1.505	-1.505	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000
A:C	-1.504	-1.504	0.000	-1.887	-1.887	0.000	-2.271	-2.271	0.000
A:D	-1.505	-1.505	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000
A:E	-1.505	-1.505	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000
A:F	1.504	1.504	0.000	1.888	1.888	0.000	2.271	2.271	0.000
B:C	1.505	1.505	0.000	1.888	1.888	0.000	2.271	2.271	0.000
B:D	1.504	1.504	0.000	1.888	1.888	0.000	2.271	2.271	0.000
B:E	1.505	1.505	0.000	1.888	1.888	0.000	2.271	2.271	0.000
B:F	-1.505	-1.505	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000
C:D	1.504	1.504	0.000	1.888	1.888	0.000	2.271	2.271	0.000
C:E	1.504	1.504	0.000	1.888	1.888	0.000	2.271	2.271	0.000
C:F	-1.504	-1.504	0.000	-1.887	-1.887	0.000	-2.271	-2.271	0.000
D:E	1.505	1.505	0.000	1.888	1.888	0.000	2.271	2.271	0.000
D:F	-1.504	-1.504	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000
E:F	-1.505	-1.505	0.000	-1.888	-1.888	0.000	-2.271	-2.271	0.000

Table B.1.2 - P-value bias for one fixed positive outlier

| | P-values - One outlier | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.008	0.016	0.008	0.001	0.016	0.015	-0.007	0.016	0.023
B	-0.008	-0.002	0.006	-0.015	-0.001	0.014	-0.026	-0.001	0.025
C	0.245	0.152	-0.093	0.305	0.159	-0.146	0.353	0.16	-0.193
D	-0.001	0.007	0.008	-0.006	0.007	0.013	-0.018	0.007	0.025
E	0.235	0.152	-0.083	0.294	0.16	-0.134	0.34	0.162	-0.178
F	0.232	0.151	-0.081	0.289	0.16	-0.129	0.334	0.162	-0.172
A:B	-0.019	-0.043	-0.024	-0.027	-0.076	-0.049	-0.037	-0.115	-0.078
A:C	-0.011	-0.034	-0.023	-0.019	-0.067	-0.048	-0.03	-0.107	-0.077
A:D	0.001	-0.025	-0.026	-0.004	-0.055	-0.051	-0.014	-0.095	-0.081
A:E	-0.006	-0.029	-0.023	-0.013	-0.061	-0.048	-0.024	-0.102	-0.078
A:F	-0.008	-0.032	-0.024	-0.018	-0.066	-0.048	-0.029	-0.107	-0.078
B:C	-0.004	-0.026	-0.022	-0.01	-0.057	-0.047	-0.019	-0.096	-0.077
B:D	-0.005	-0.028	-0.023	-0.012	-0.058	-0.046	-0.023	-0.097	-0.074
B:E	0.014	-0.01	-0.024	0.005	-0.043	-0.048	-0.008	-0.087	-0.079
B:F	-0.004	-0.03	-0.026	-0.012	-0.063	-0.051	-0.024	-0.106	-0.082
C:D	-0.018	-0.04	-0.022	-0.026	-0.073	-0.047	-0.035	-0.112	-0.077
C:E	0.234	0.207	-0.027	0.294	0.244	-0.050	0.342	0.266	-0.076
C:F	0.156	0.131	-0.025	0.183	0.135	-0.048	0.201	0.124	-0.077
D:E	0.009	-0.015	-0.024	0	-0.048	-0.048	-0.011	-0.089	-0.078
D:F	-0.011	-0.035	-0.024	-0.023	-0.071	-0.048	-0.035	-0.113	-0.078
E:F	-0.067	-0.09	-0.023	-0.08	-0.128	-0.048	-0.093	-0.171	-0.078

Table B.1.3 - Standard error bias for one fixed positive outlier

	Standard Error - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
B	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
C	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
D	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
E	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A:B	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A:C	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A:D	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A:E	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
A:F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
B:C	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
B:D	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
B:E	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
B:F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
C:D	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
C:E	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
C:F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
D:E	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
D:F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641
E:F	0.5	0.327	-0.173	0.757	0.38	-0.377	1.041	0.4	-0.641

Table B.1.4 – Power bias for one fixed outlier

	Power - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.018	-0.002	0.016	-0.021	0	0.021	-0.022	-0.003	0.019
B	-0.002	-0.006	-0.004	-0.006	-0.01	-0.004	-0.013	-0.01	0.003
C	-0.228	-0.145	0.083	-0.246	-0.15	0.096	-0.251	-0.15	0.101
D	0.003	0.001	-0.002	-0.003	-0.006	-0.003	-0.009	-0.009	0.000
E	-0.216	-0.161	0.055	-0.229	-0.163	0.066	-0.23	-0.163	0.067
F	-0.199	-0.139	0.060	-0.217	-0.142	0.075	-0.221	-0.142	0.079
A:B	0.002	0.016	0.014	-0.004	0.028	0.032	-0.02	0.056	0.076
A:C	-0.01	0.015	0.025	-0.019	0.027	0.046	-0.027	0.052	0.079
A:D	-0.007	0.01	0.017	-0.017	0.028	0.045	-0.022	0.052	0.074
A:E	-0.009	0.014	0.023	-0.014	0.022	0.036	-0.02	0.048	0.068
A:F	0.005	0.018	0.013	-0.002	0.038	0.040	-0.012	0.057	0.069
B:C	-0.011	0.013	0.024	-0.016	0.026	0.042	-0.024	0.047	0.071
B:D	-0.002	0.009	0.011	-0.01	0.018	0.028	-0.022	0.046	0.068
B:E	-0.014	0.013	0.027	-0.02	0.031	0.051	-0.025	0.059	0.084
B:F	-0.01	0.012	0.022	-0.016	0.033	0.049	-0.022	0.053	0.075
C:D	0.007	0.03	0.023	0	0.051	0.051	-0.009	0.071	0.080
C:E	-0.189	-0.16	0.029	-0.201	-0.172	0.029	-0.206	-0.174	0.032
C:F	-0.102	-0.09	0.012	-0.11	-0.098	0.012	-0.111	-0.099	0.012
D:E	-0.014	-0.001	0.013	-0.019	0.021	0.040	-0.021	0.037	0.058
D:F	-0.006	0.005	0.011	-0.01	0.025	0.035	-0.021	0.052	0.073
E:F	0.022	0.053	0.031	0.01	0.08	0.070	0.002	0.11	0.108

Table B.1.5 - Coefficient bias for two fixed positive outliers

	Coefficients - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	2.436	2.436	0.000	3.202	3.202	0.000	3.968	3.968	0.000
A	-2.436	-1.73	0.706	-3.202	-1.885	1.317	-3.968	-1.943	2.025
B	0.574	0.188	-0.386	0.574	0.072	-0.502	0.574	0.026	-0.548
C	2.436	1.722	-0.714	3.202	1.879	-1.323	3.968	1.94	-2.028
D	0.573	0.204	-0.369	0.573	0.093	-0.480	0.573	0.05	-0.523
E	0.574	0.202	-0.372	0.574	0.087	-0.487	0.574	0.043	-0.531
F	-0.574	-0.179	0.395	-0.574	-0.065	0.509	-0.574	-0.02	0.554
A:B	-0.574	-0.574	0.000	-0.574	-0.574	0.000	-0.574	-0.574	0.000
A:C	-2.435	-2.435	0.000	-3.202	-3.202	0.000	-3.968	-3.968	0.000
A:D	-0.574	-0.574	0.000	-0.574	-0.574	0.000	-0.574	-0.574	0.000
A:E	-0.574	-0.574	0.000	-0.574	-0.574	0.000	-0.574	-0.574	0.000
A:F	0.573	0.573	0.000	0.573	0.573	0.000	0.573	0.573	0.000
B:C	0.574	0.574	0.000	0.574	0.574	0.000	0.574	0.574	0.000
B:D	2.435	2.435	0.000	3.202	3.202	0.000	3.968	3.968	0.000
B:E	2.436	2.436	0.000	3.202	3.202	0.000	3.969	3.969	0.000
B:F	-2.436	-2.436	0.000	-3.202	-3.202	0.000	-3.968	-3.968	0.000
C:D	0.574	0.574	0.000	0.574	0.574	0.000	0.574	0.574	0.000
C:E	0.573	0.573	0.000	0.573	0.573	0.000	0.573	0.573	0.000
C:F	-0.573	-0.573	0.000	-0.573	-0.573	0.000	-0.573	-0.573	0.000
D:E	2.436	2.436	0.000	3.202	3.202	0.000	3.969	3.969	0.000
D:F	-2.435	-2.435	0.000	-3.202	-3.202	0.000	-3.968	-3.968	0.000
E:F	-2.436	-2.436	0.000	-3.202	-3.202	0.000	-3.968	-3.968	0.000

Table B.1.6 - P-value bias for two fixed positive outliers

| | P-values - Two outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.056	-0.007	0.049	-0.096	-0.006	0.090	-0.132	-0.002	0.130
B	0.103	0.06	-0.043	0.149	0.071	-0.078	0.19	0.075	-0.115
C	0.33	0.229	-0.101	0.37	0.247	-0.123	0.362	0.251	-0.111
D	0.101	0.065	-0.036	0.147	0.074	-0.073	0.188	0.078	-0.110
E	0.177	0.102	-0.075	0.229	0.107	-0.122	0.277	0.111	-0.166
F	0.171	0.089	-0.082	0.222	0.095	-0.127	0.27	0.099	-0.171
A:B	0.086	0.057	-0.029	0.133	0.075	-0.058	0.175	0.085	-0.090
A:C	-0.082	-0.107	-0.025	-0.126	-0.182	-0.056	-0.161	-0.257	-0.096
A:D	0.1	0.069	-0.031	0.146	0.087	-0.059	0.187	0.097	-0.090
A:E	0.098	0.07	-0.028	0.144	0.088	-0.056	0.185	0.096	-0.089
A:F	0.106	0.078	-0.028	0.152	0.097	-0.055	0.193	0.106	-0.087
B:C	0.095	0.067	-0.028	0.142	0.086	-0.056	0.184	0.096	-0.088
B:D	-0.072	-0.095	-0.023	-0.115	-0.17	-0.055	-0.152	-0.248	-0.096
B:E	-0.057	-0.083	-0.026	-0.1	-0.157	-0.057	-0.137	-0.233	-0.096
B:F	-0.08	-0.108	-0.028	-0.124	-0.184	-0.060	-0.159	-0.258	-0.099
C:D	0.089	0.06	-0.029	0.135	0.077	-0.058	0.177	0.086	-0.091
C:E	0.177	0.148	-0.029	0.23	0.167	-0.063	0.278	0.177	-0.101
C:F	0.156	0.125	-0.031	0.204	0.144	-0.060	0.247	0.153	-0.094
D:E	-0.06	-0.085	-0.025	-0.103	-0.158	-0.055	-0.141	-0.236	-0.095
D:F	-0.085	-0.108	-0.023	-0.127	-0.181	-0.054	-0.161	-0.254	-0.093
E:F	-0.148	-0.172	-0.024	-0.183	-0.237	-0.054	-0.209	-0.299	-0.090

Table B.1.7 - Standard error bias for two fixed positive outliers

	Standard Error - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
B	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
C	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
D	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
E	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A:B	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A:C	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A:D	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A:E	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
A:F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
B:C	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
B:D	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
B:E	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
B:F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
C:D	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
C:E	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
C:F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
D:E	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
D:F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894
E:F	0.762	0.561	-0.201	1.213	0.724	-0.489	1.706	0.812	-0.894

Table B.1.8 – Power bias for two fixed positive outliers

	Power - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.002	0.005	0.007	-0.006	0.001	0.007	-0.013	-0.004	0.009
B	-0.036	-0.036	0.000	-0.04	-0.034	0.006	-0.043	-0.038	0.005
C	-0.243	-0.194	0.049	-0.248	-0.197	0.051	-0.249	-0.2	0.049
D	-0.036	-0.022	0.014	-0.041	-0.026	0.015	-0.044	-0.028	0.016
E	-0.199	-0.119	0.080	-0.23	-0.128	0.102	-0.232	-0.129	0.103
F	-0.194	-0.118	0.076	-0.211	-0.122	0.089	-0.224	-0.126	0.098
A:B	-0.039	-0.035	0.004	-0.051	-0.041	0.010	-0.052	-0.042	0.010
A:C	0.003	0.048	0.045	-0.006	0.083	0.089	-0.016	0.136	0.152
A:D	-0.042	-0.041	0.001	-0.049	-0.044	0.005	-0.049	-0.045	0.004
A:E	-0.038	-0.032	0.006	-0.046	-0.037	0.009	-0.049	-0.041	0.008
A:F	-0.038	-0.038	0.000	-0.042	-0.039	0.003	-0.043	-0.041	0.002
B:C	-0.043	-0.04	0.003	-0.046	-0.04	0.006	-0.046	-0.042	0.004
B:D	0.006	0.03	0.024	-0.002	0.062	0.064	-0.009	0.122	0.131
B:E	0.014	0.048	0.034	-0.002	0.078	0.080	-0.015	0.149	0.164
B:F	0.004	0.039	0.035	-0.005	0.089	0.094	-0.019	0.147	0.166
C:D	-0.033	-0.027	0.006	-0.04	-0.029	0.011	-0.042	-0.029	0.013
C:E	-0.178	-0.142	0.036	-0.199	-0.151	0.048	-0.207	-0.153	0.054
C:F	-0.105	-0.095	0.010	-0.114	-0.1	0.014	-0.119	-0.103	0.016
D:E	0.003	0.03	0.027	-0.004	0.068	0.072	-0.017	0.135	0.152
D:F	0.015	0.04	0.025	0.007	0.084	0.077	-0.01	0.127	0.137
E:F	0.048	0.095	0.047	0.031	0.139	0.108	0.014	0.208	0.194

Table B.1.9 - Coefficient bias for three fixed positive outliers

	Coefficients- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	3.5	3.5	0.000	4.649	4.649	0.000	5.799	5.799	0.000
A	-3.5	-2.89	0.610	-4.65	-3.368	1.282	-5.799	-3.641	2.158
B	1.638	1.538	-0.100	2.021	1.85	-0.171	2.404	2.075	-0.329
C	1.371	0.89	-0.481	1.754	0.915	-0.839	2.138	0.893	-1.245
D	-0.491	-0.511	-0.020	-0.874	-0.692	0.182	-1.257	-0.769	0.488
E	1.638	1.571	-0.067	2.021	1.886	-0.135	2.404	2.111	-0.293
F	-1.638	-1.533	0.105	-2.021	-1.841	0.180	-2.404	-2.07	0.334
A:B	-1.638	-1.638	0.000	-2.021	-2.021	0.000	-2.405	-2.405	0.000
A:C	-1.371	-1.371	0.000	-1.754	-1.754	0.000	-2.137	-2.137	0.000
A:D	0.49	0.49	0.000	0.873	0.873	0.000	1.256	1.256	0.000
A:E	-1.638	-1.638	0.000	-2.021	-2.021	0.000	-2.404	-2.404	0.000
A:F	1.638	1.638	0.000	2.021	2.021	0.000	2.404	2.404	0.000
B:C	-0.49	-0.49	0.000	-0.874	-0.874	0.000	-1.257	-1.257	0.000
B:D	1.371	1.371	0.000	1.754	1.754	0.000	2.137	2.137	0.000
B:E	3.5	3.5	0.000	4.65	4.65	0.000	5.799	5.799	0.000
B:F	-3.5	-3.5	0.000	-4.65	-4.65	0.000	-5.799	-5.799	0.000
C:D	1.638	1.638	0.000	2.021	2.021	0.000	2.404	2.404	0.000
C:E	-0.491	-0.491	0.000	-0.874	-0.874	0.000	-1.257	-1.257	0.000
C:F	0.491	0.491	0.000	0.874	0.874	0.000	1.257	1.257	0.000
D:E	1.372	1.372	0.000	1.755	1.755	0.000	2.138	2.138	0.000
D:F	-1.371	-1.371	0.000	-1.754	-1.754	0.000	-2.137	-2.137	0.000
E:F	-3.5	-3.5	0.000	-4.65	-4.65	0.000	-5.799	-5.799	0.000

Table B.1.10 - P-value bias for three fixed positive outliers

| | P-values- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.166	-0.082	0.084	-0.227	-0.086	0.141	-0.266	-0.081	0.185
B	0.038	0.038	0.000	0.053	0.045	-0.008	0.064	0.048	-0.016
C	0.285	0.212	-0.073	0.373	0.253	-0.120	0.436	0.274	-0.162
D	0.12	0.084	-0.036	0.154	0.111	-0.043	0.175	0.13	-0.045
E	0.3	0.262	-0.038	0.378	0.309	-0.069	0.434	0.325	-0.109
F	0.302	0.265	-0.037	0.377	0.315	-0.062	0.43	0.333	-0.097
A:B	0.021	0.014	-0.007	0.04	0.022	-0.018	0.053	0.012	-0.041
A:C	0.062	0.057	-0.005	0.08	0.065	-0.015	0.09	0.053	-0.037
A:D	0.115	0.107	-0.008	0.15	0.133	-0.017	0.171	0.135	-0.036
A:E	0.034	0.029	-0.005	0.052	0.035	-0.017	0.064	0.023	-0.041
A:F	0.033	0.028	-0.005	0.049	0.032	-0.017	0.059	0.018	-0.041
B:C	0.123	0.117	-0.006	0.157	0.142	-0.015	0.176	0.14	-0.036
B:D	0.066	0.063	-0.003	0.085	0.072	-0.013	0.097	0.062	-0.035
B:E	-0.172	-0.176	-0.004	-0.232	-0.244	-0.012	-0.27	-0.302	-0.032
B:F	-0.197	-0.199	-0.002	-0.253	-0.263	-0.010	-0.288	-0.319	-0.031
C:D	0.022	0.017	-0.005	0.04	0.023	-0.017	0.052	0.012	-0.040
C:E	0.067	0.064	-0.003	0.086	0.072	-0.014	0.103	0.064	-0.039
C:F	0.081	0.077	-0.004	0.099	0.082	-0.017	0.112	0.071	-0.041
D:E	0.079	0.073	-0.006	0.099	0.084	-0.015	0.108	0.073	-0.035
D:F	0.057	0.05	-0.007	0.075	0.06	-0.015	0.085	0.047	-0.038
E:F	-0.249	-0.248	0.001	-0.289	-0.297	-0.008	-0.313	-0.339	-0.026

Table B.1.11 - Standard error bias for three fixed positive outliers

| | Standard Error- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
B	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
C	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
D	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
E	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A:B	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A:C	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A:D	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A:E	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
A:F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
B:C	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
B:D	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
B:E	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
B:F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
C:D	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
C:E	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
C:F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
D:E	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
D:F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378
E:F	0.91	0.891	-0.019	1.476	1.361	-0.115	2.087	1.709	-0.378

Table B.1.12 – Power bias for three fixed positive outliers

| | Power- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.053	0.03	-0.023	0.044	-0.003	-0.047	0.032	-0.018	-0.050
B	-0.027	-0.031	-0.004	-0.04	-0.035	0.005	-0.042	-0.04	0.002
C	-0.249	-0.199	0.050	-0.252	-0.214	0.038	-0.252	-0.22	0.032
D	-0.04	-0.038	0.002	-0.044	-0.045	-0.001	-0.044	-0.046	-0.002
E	-0.229	-0.219	0.010	-0.233	-0.228	0.005	-0.233	-0.227	0.006
F	-0.219	-0.213	0.006	-0.226	-0.226	0.000	-0.226	-0.226	0.000
A:B	-0.032	-0.031	0.001	-0.047	-0.034	0.013	-0.051	-0.032	0.019
A:C	-0.043	-0.035	0.008	-0.048	-0.04	0.008	-0.051	-0.038	0.013
A:D	-0.046	-0.051	-0.005	-0.048	-0.05	-0.002	-0.049	-0.048	0.001
A:E	-0.032	-0.027	0.005	-0.041	-0.035	0.006	-0.046	-0.033	0.013
A:F	-0.033	-0.036	-0.003	-0.043	-0.036	0.007	-0.043	-0.032	0.011
B:C	-0.042	-0.049	-0.007	-0.046	-0.051	-0.005	-0.046	-0.051	-0.005
B:D	-0.037	-0.044	-0.007	-0.046	-0.045	0.001	-0.047	-0.049	-0.002
B:E	0.055	0.072	0.017	0.054	0.091	0.037	0.031	0.139	0.108
B:F	0.055	0.069	0.014	0.053	0.094	0.041	0.03	0.142	0.112
C:D	-0.027	-0.016	0.011	-0.038	-0.021	0.017	-0.04	-0.024	0.016
C:E	-0.143	-0.112	0.031	-0.175	-0.131	0.044	-0.2	-0.14	0.060
C:F	-0.095	-0.08	0.015	-0.106	-0.096	0.010	-0.113	-0.096	0.017
D:E	-0.042	-0.045	-0.003	-0.045	-0.049	-0.004	-0.048	-0.051	-0.003
D:F	-0.037	-0.044	-0.007	-0.049	-0.048	0.001	-0.051	-0.048	0.003
E:F	0.133	0.135	0.002	0.119	0.162	0.043	0.101	0.202	0.101

B.2 - Bias for fixed outliers with negative

Table B.2.1 - Coefficient bias for one fixed positive and one negative outlier

	Coefficients - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.137	0.137	0.000	0.137	0.137	0.000	0.137	0.137	0.000
A	-0.137	-0.043	0.094	-0.137	-0.011	0.126	-0.137	0.012	0.149
B	2.872	2.579	-0.293	3.639	3.002	-0.637	4.405	3.293	-1.112
C	0.137	0.008	-0.129	0.137	-0.019	-0.156	0.137	-0.044	-0.181
D	2.872	2.622	-0.250	3.638	3.043	-0.595	4.404	3.335	-1.069
E	2.872	2.595	-0.277	3.639	3.02	-0.619	4.405	3.309	-1.096
F	-2.872	-2.6	0.272	-3.639	-3.023	0.616	-4.405	-3.317	1.088
A:B	-2.873	-2.873	0.000	-3.639	-3.639	0.000	-4.405	-4.405	0.000
A:C	-0.137	-0.137	0.000	-0.137	-0.137	0.000	-0.137	-0.137	0.000
A:D	-2.873	-2.873	0.000	-3.639	-3.639	0.000	-4.405	-4.405	0.000
A:E	-2.873	-2.873	0.000	-3.639	-3.639	0.000	-4.405	-4.405	0.000
A:F	2.872	2.872	0.000	3.638	3.638	0.000	4.405	4.405	0.000
B:C	2.873	2.873	0.000	3.639	3.639	0.000	4.405	4.405	0.000
B:D	0.137	0.137	0.000	0.137	0.137	0.000	0.137	0.137	0.000
B:E	0.137	0.137	0.000	0.137	0.137	0.000	0.137	0.137	0.000
B:F	-0.137	-0.137	0.000	-0.137	-0.137	0.000	-0.137	-0.137	0.000
C:D	2.872	2.872	0.000	3.639	3.639	0.000	4.405	4.405	0.000
C:E	2.872	2.872	0.000	3.638	3.638	0.000	4.405	4.405	0.000
C:F	-2.872	-2.872	0.000	-3.638	-3.638	0.000	-4.405	-4.405	0.000
D:E	0.137	0.137	0.000	0.137	0.137	0.000	0.137	0.137	0.000
D:F	-0.137	-0.137	0.000	-0.137	-0.137	0.000	-0.137	-0.137	0.000
E:F	-0.137	-0.137	0.000	-0.137	-0.137	0.000	-0.137	-0.137	0.000

Table B.2.2 - P-value bias for one fixed positive and one negative outlier

| | P-values - Two outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.108	0.107	-0.001	0.147	0.133	-0.014	0.182	0.152	-0.030
B	-0.142	-0.092	0.050	-0.19	-0.107	0.083	-0.229	-0.11	0.119
C	0.109	0.092	-0.017	0.154	0.125	-0.029	0.197	0.152	-0.045
D	-0.134	-0.091	0.043	-0.185	-0.105	0.080	-0.224	-0.109	0.115
E	0.311	0.282	-0.029	0.312	0.294	-0.018	0.276	0.293	0.017
F	0.299	0.273	-0.026	0.306	0.286	-0.020	0.276	0.285	0.009
A:B	-0.149	-0.142	0.007	-0.194	-0.193	0.001	-0.231	-0.242	-0.011
A:C	0.106	0.109	0.003	0.144	0.14	-0.004	0.179	0.164	-0.015
A:D	-0.129	-0.124	0.005	-0.178	-0.18	-0.002	-0.218	-0.231	-0.013
A:E	-0.139	-0.133	0.006	-0.185	-0.183	0.002	-0.224	-0.234	-0.010
A:F	-0.147	-0.142	0.005	-0.194	-0.194	0.000	-0.231	-0.244	-0.013
B:C	-0.131	-0.124	0.007	-0.178	-0.177	0.001	-0.218	-0.229	-0.011
B:D	0.103	0.105	0.002	0.142	0.137	-0.005	0.177	0.161	-0.016
B:E	0.101	0.104	0.003	0.14	0.136	-0.004	0.176	0.16	-0.016
B:F	0.104	0.105	0.001	0.142	0.137	-0.005	0.177	0.16	-0.017
C:D	-0.151	-0.144	0.007	-0.197	-0.195	0.002	-0.233	-0.244	-0.011
C:E	0.313	0.313	0.000	0.315	0.31	-0.005	0.276	0.257	-0.019
C:F	0.124	0.127	0.003	0.083	0.08	-0.003	0.033	0.016	-0.017
D:E	0.095	0.097	0.002	0.135	0.129	-0.006	0.171	0.153	-0.018
D:F	0.098	0.101	0.003	0.137	0.133	-0.004	0.172	0.156	-0.016
E:F	0.096	0.098	0.002	0.135	0.129	-0.006	0.171	0.152	-0.019

Table B.2.3 - Standard error bias for one fixed positive and one negative outliers

| | Standard Error - Two outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
B	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
C	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
D	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
E	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A:B	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A:C	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A:D	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A:E	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
A:F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
B:C	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
B:D	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
B:E	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
B:F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
C:D	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
C:E	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
C:F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
D:E	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
D:F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123
E:F	0.67	0.711	0.041	1.029	1.029	0.000	1.421	1.298	-0.123

Table B.2.4 - Power bias for one fixed positive and one negative outliers

	Power - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.054	-0.05	0.004	-0.06	-0.057	0.003	-0.061	-0.059	0.002
B	0.056	0.028	-0.028	0.052	0.013	-0.039	0.046	0.005	-0.041
C	-0.183	-0.149	0.034	-0.22	-0.173	0.047	-0.244	-0.191	0.053
D	0.072	0.045	-0.027	0.071	0.036	-0.035	0.07	0.019	-0.051
E	-0.227	-0.226	0.001	-0.226	-0.227	-0.001	-0.227	-0.23	-0.003
F	-0.213	-0.219	-0.006	-0.215	-0.22	-0.005	-0.216	-0.225	-0.009
A:B	0.061	0.064	0.003	0.061	0.067	0.006	0.056	0.085	0.029
A:C	-0.046	-0.043	0.003	-0.051	-0.05	0.001	-0.051	-0.052	-0.001
A:D	0.054	0.038	-0.016	0.056	0.057	0.001	0.049	0.079	0.030
A:E	0.047	0.029	-0.018	0.042	0.052	0.010	0.035	0.084	0.049
A:F	0.067	0.046	-0.021	0.069	0.062	-0.007	0.065	0.091	0.026
B:C	0.048	0.037	-0.011	0.046	0.051	0.005	0.04	0.088	0.048
B:D	-0.042	-0.055	-0.013	-0.043	-0.062	-0.019	-0.046	-0.063	-0.017
B:E	-0.039	-0.042	-0.003	-0.045	-0.045	0.000	-0.046	-0.048	-0.002
B:F	-0.037	-0.043	-0.006	-0.044	-0.049	-0.005	-0.048	-0.053	-0.005
C:D	0.066	0.063	-0.003	0.068	0.077	0.009	0.065	0.102	0.037
C:E	-0.198	-0.197	0.001	-0.2	-0.196	0.004	-0.201	-0.193	0.008
C:F	-0.088	-0.096	-0.008	-0.089	-0.084	0.005	-0.088	-0.076	0.012
D:E	-0.046	-0.06	-0.014	-0.049	-0.06	-0.011	-0.049	-0.06	-0.011
D:F	-0.044	-0.053	-0.009	-0.049	-0.056	-0.007	-0.05	-0.06	-0.010
E:F	-0.049	-0.045	0.004	-0.059	-0.055	0.004	-0.066	-0.061	0.005

Table B.2.5 - Coefficient bias for two fixed positive and one negative outlier

	Coefficients- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	1.201	1.201	0.000	1.584	1.584	0.000	1.968	1.968	0.000
A	-1.201	-1.278	-0.077	-1.585	-1.686	-0.101	-1.968	-2.095	-0.127
B	3.937	3.932	-0.005	5.086	5.058	-0.028	6.235	6.192	-0.043
C	-0.927	-1.139	-0.212	-1.311	-1.58	-0.269	-1.694	-2.005	-0.311
D	1.808	1.844	0.036	2.191	2.23	0.039	2.574	2.618	0.044
E	3.937	3.964	0.027	5.086	5.089	0.003	6.235	6.224	-0.011
F	-3.937	-3.955	-0.018	-5.086	-5.081	0.005	-6.235	-6.213	0.022
A:B	-3.937	-3.937	0.000	-5.086	-5.086	0.000	-6.236	-6.236	0.000
A:C	0.928	0.928	0.000	1.311	1.311	0.000	1.694	1.694	0.000
A:D	-1.809	-1.809	0.000	-2.192	-2.192	0.000	-2.575	-2.575	0.000
A:E	-3.937	-3.937	0.000	-5.086	-5.086	0.000	-6.236	-6.236	0.000
A:F	3.936	3.936	0.000	5.086	5.086	0.000	6.235	6.235	0.000
B:C	1.808	1.808	0.000	2.191	2.191	0.000	2.575	2.575	0.000
B:D	-0.928	-0.928	0.000	-1.311	-1.311	0.000	-1.694	-1.694	0.000
B:E	1.202	1.202	0.000	1.585	1.585	0.000	1.968	1.968	0.000
B:F	-1.201	-1.201	0.000	-1.585	-1.585	0.000	-1.968	-1.968	0.000
C:D	3.937	3.937	0.000	5.086	5.086	0.000	6.235	6.235	0.000
C:E	1.808	1.808	0.000	2.191	2.191	0.000	2.574	2.574	0.000
C:F	-1.808	-1.808	0.000	-2.191	-2.191	0.000	-2.574	-2.574	0.000
D:E	-0.927	-0.927	0.000	-1.31	-1.31	0.000	-1.693	-1.693	0.000
D:F	0.928	0.928	0.000	1.311	1.311	0.000	1.694	1.694	0.000
E:F	-1.201	-1.201	0.000	-1.585	-1.585	0.000	-1.968	-1.968	0.000

Table B.2.6 - P-value bias for two fixed positive and one negative outlier

| | P-values- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.064	0.069	0.005	0.072	0.079	0.007	0.074	0.085	0.011
B	-0.27	-0.245	0.025	-0.332	-0.301	0.031	-0.369	-0.337	0.032
C	-0.024	-0.033	-0.009	-0.019	-0.028	-0.009	-0.011	-0.02	-0.009
D	-0.008	-0.004	0.004	-0.007	0.006	0.013	-0.01	0.01	0.020
E	0.245	0.23	-0.015	0.152	0.159	0.007	0.053	0.075	0.022
F	0.246	0.231	-0.015	0.148	0.158	0.010	0.047	0.071	0.024
A:B	-0.27	-0.259	0.011	-0.331	-0.315	0.016	-0.368	-0.35	0.018
A:C	0.074	0.081	0.007	0.086	0.098	0.012	0.09	0.106	0.016
A:D	-0.006	0.002	0.008	-0.004	0.008	0.012	-0.006	0.011	0.017
A:E	-0.264	-0.251	0.013	-0.326	-0.309	0.017	-0.364	-0.344	0.020
A:F	-0.271	-0.262	0.009	-0.33	-0.314	0.016	-0.365	-0.347	0.018
B:C	-0.013	-0.004	0.009	-0.011	0.004	0.015	-0.011	0.008	0.019
B:D	0.077	0.083	0.006	0.088	0.099	0.011	0.089	0.104	0.015
B:E	0.068	0.075	0.007	0.076	0.087	0.011	0.077	0.093	0.016
B:F	0.052	0.059	0.007	0.057	0.068	0.011	0.056	0.071	0.015
C:D	-0.275	-0.263	0.012	-0.332	-0.316	0.016	-0.369	-0.35	0.019
C:E	0.281	0.286	0.005	0.345	0.352	0.007	0.391	0.4	0.009
C:F	0.182	0.186	0.004	0.211	0.221	0.010	0.228	0.241	0.013
D:E	0.056	0.063	0.007	0.067	0.079	0.012	0.069	0.086	0.017
D:F	0.073	0.08	0.007	0.085	0.097	0.012	0.09	0.105	0.015
E:F	-0.01	-0.002	0.008	-0.011	0.002	0.013	-0.013	0.004	0.017

Table B.2.7 - Standard error bias for two fixed positive and one negative outlier

| | Standard Error- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
B	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
C	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
D	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
E	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A:B	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A:C	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A:D	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A:E	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
A:F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
B:C	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
B:D	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
B:E	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
B:F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
C:D	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
C:E	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
C:F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
D:E	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
D:F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197
E:F	0.637	0.71	0.073	1.016	1.154	0.138	1.432	1.629	0.197

Table B.2.8 - Power bias for two fixed positive and one negative outlier

| | Power- Three outliers | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.039	-0.03	0.009	-0.048	-0.043	0.005	-0.054	-0.059	-0.005
B	0.185	0.153	-0.032	0.23	0.179	-0.051	0.255	0.184	-0.071
C	-0.093	-0.051	0.042	-0.133	-0.1	0.033	-0.168	-0.148	0.020
D	0.004	-0.001	-0.005	-0.014	-0.013	0.001	-0.029	-0.025	0.004
E	-0.203	-0.203	0.000	-0.196	-0.195	0.001	-0.179	-0.19	-0.011
F	-0.203	-0.208	-0.005	-0.189	-0.201	-0.012	-0.176	-0.19	-0.014
A:B	0.18	0.161	-0.019	0.22	0.188	-0.032	0.249	0.204	-0.045
A:C	-0.036	-0.035	0.001	-0.042	-0.046	-0.004	-0.048	-0.051	-0.003
A:D	-0.012	-0.014	-0.002	-0.026	-0.031	-0.005	-0.035	-0.042	-0.007
A:E	0.167	0.148	-0.019	0.209	0.161	-0.048	0.253	0.184	-0.069
A:F	0.21	0.179	-0.031	0.244	0.208	-0.036	0.275	0.215	-0.060
B:C	-0.007	-0.022	-0.015	-0.025	-0.037	-0.012	-0.036	-0.05	-0.014
B:D	-0.035	-0.051	-0.016	-0.035	-0.055	-0.020	-0.04	-0.059	-0.019
B:E	-0.03	-0.028	0.002	-0.037	-0.042	-0.005	-0.041	-0.044	-0.003
B:F	-0.033	-0.029	0.004	-0.04	-0.041	-0.001	-0.043	-0.049	-0.006
C:D	0.192	0.175	-0.017	0.246	0.197	-0.049	0.273	0.215	-0.058
C:E	-0.196	-0.194	0.002	-0.204	-0.206	-0.002	-0.208	-0.208	0.000
C:F	-0.106	-0.11	-0.004	-0.111	-0.123	-0.012	-0.117	-0.133	-0.016
D:E	-0.039	-0.045	-0.006	-0.045	-0.055	-0.010	-0.047	-0.059	-0.012
D:F	-0.036	-0.043	-0.007	-0.042	-0.051	-0.009	-0.046	-0.058	-0.012
E:F	-0.029	-0.027	0.002	-0.041	-0.039	0.002	-0.05	-0.052	-0.002

B.3 – Bias for Random outliers

Table B.3.1 - Coefficient bias for one random outlier

	Coefficients - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.026	0.026	0.000	0.038	0.038	0.000	0.049	0.049	0.000
A	-0.042	-0.024	0.018	-0.055	-0.018	0.037	-0.069	-0.016	0.053
B	-0.002	-0.022	-0.020	-0.004	-0.021	-0.017	-0.006	-0.02	-0.014
C	0.084	0.048	-0.036	0.084	0.043	-0.041	0.084	0.041	-0.043
D	0.016	0.017	0.001	0.017	0.015	-0.002	0.018	0.015	-0.003
E	0.122	0.061	-0.061	0.136	0.051	-0.085	0.15	0.043	-0.107
F	-0.067	-0.024	0.043	-0.062	-0.005	0.057	-0.056	0	0.056
A:B	-0.02	-0.02	0.000	-0.031	-0.031	0.000	-0.041	-0.041	0.000
A:C	0.024	0.024	0.000	0.03	0.03	0.000	0.036	0.036	0.000
A:D	-0.094	-0.094	0.000	-0.132	-0.132	0.000	-0.169	-0.169	0.000
A:E	-0.004	-0.004	0.000	-0.007	-0.007	0.000	-0.01	-0.01	0.000
A:F	0.018	0.018	0.000	0.026	0.026	0.000	0.034	0.034	0.000
B:C	0.023	0.023	0.000	0.028	0.028	0.000	0.033	0.033	0.000
B:D	-0.004	-0.004	0.000	-0.006	-0.006	0.000	-0.008	-0.008	0.000
B:E	0.052	0.052	0.000	0.074	0.074	0.000	0.097	0.097	0.000
B:F	0.048	0.048	0.000	0.07	0.07	0.000	0.093	0.093	0.000
C:D	-0.007	-0.007	0.000	-0.011	-0.011	0.000	-0.014	-0.014	0.000
C:E	0.08	0.08	0.000	0.082	0.082	0.000	0.083	0.083	0.000
C:F	-0.003	-0.003	0.000	0.014	0.014	0.000	0.03	0.03	0.000
D:E	-0.024	-0.024	0.000	-0.038	-0.038	0.000	-0.052	-0.052	0.000
D:F	-0.022	-0.022	0.000	-0.029	-0.029	0.000	-0.036	-0.036	0.000
E:F	0	0	0.000	-0.01	-0.01	0.000	-0.02	-0.02	0.000

Table B.3.2 – P-Value bias for one random outlier

	P-values - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.01	0.009	-0.001	0.006	0.011	0.005	-0.001	0.013	0.014
B	-0.005	0.001	0.006	-0.012	0.003	0.015	-0.021	0.004	0.025
C	0.053	0.038	-0.015	0.08	0.047	-0.033	0.105	0.05	-0.055
D	0.001	0	-0.001	-0.008	0.001	0.009	-0.022	0.002	0.024
E	0.06	0.045	-0.015	0.088	0.054	-0.034	0.113	0.058	-0.055
F	0.054	0.039	-0.015	0.081	0.046	-0.035	0.107	0.05	-0.057
A:B	-0.002	-0.012	-0.010	-0.005	-0.03	-0.025	-0.012	-0.061	-0.049
A:C	0.015	0.008	-0.007	0.011	-0.013	-0.024	0.002	-0.046	-0.048
A:D	0.001	-0.006	-0.007	-0.004	-0.027	-0.023	-0.013	-0.06	-0.047
A:E	-0.004	-0.013	-0.009	-0.013	-0.04	-0.027	-0.024	-0.077	-0.053
A:F	0.009	0.001	-0.008	0.003	-0.021	-0.024	-0.005	-0.053	-0.048
B:C	0	-0.008	-0.008	-0.004	-0.029	-0.025	-0.013	-0.063	-0.050
B:D	0.009	0	-0.009	-0.001	-0.026	-0.025	-0.015	-0.065	-0.050
B:E	0.005	-0.002	-0.007	-0.002	-0.023	-0.021	-0.013	-0.058	-0.045
B:F	-0.004	-0.012	-0.008	-0.012	-0.036	-0.024	-0.021	-0.069	-0.048
C:D	0.002	-0.007	-0.009	0.001	-0.024	-0.025	-0.004	-0.054	-0.050
C:E	0.056	0.047	-0.009	0.081	0.056	-0.025	0.103	0.057	-0.046
C:F	0.024	0.014	-0.010	0.032	0.004	-0.028	0.034	-0.018	-0.052
D:E	-0.003	-0.012	-0.009	-0.006	-0.029	-0.023	-0.013	-0.06	-0.047
D:F	-0.001	-0.008	-0.007	-0.009	-0.033	-0.024	-0.022	-0.071	-0.049
E:F	0.009	0.002	-0.007	0.01	-0.01	-0.020	0.006	-0.038	-0.044

Table B.3.3 – Standard error bias for one random outlier

| | Standard Error - One outlier | | | | | | | | |
| | 3 SD | | | 4 SD | | | 5 SD | | |
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
B	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
C	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
D	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
E	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A:B	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A:C	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A:D	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A:E	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
A:F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
B:C	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
B:D	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
B:E	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
B:F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
C:D	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
C:E	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
C:F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
D:E	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
D:F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390
E:F	0.302	0.24	-0.062	0.524	0.336	-0.188	0.782	0.392	-0.390

Table B.3.4 - Power bias for one random outlier

	Power - One outlier								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	-0.002	-0.005	-0.003	-0.002	-0.008	-0.006	-0.007	-0.01	-0.003
B	0	-0.005	-0.005	-0.004	-0.008	-0.004	-0.009	-0.011	-0.002
C	-0.063	-0.052	0.011	-0.083	-0.06	0.023	-0.102	-0.063	0.039
D	0.011	0	-0.011	0.005	-0.004	-0.009	0	-0.007	-0.007
E	-0.072	-0.028	0.044	-0.085	-0.041	0.044	-0.109	-0.052	0.057
F	-0.056	-0.031	0.025	-0.077	-0.043	0.034	-0.097	-0.05	0.047
A:B	0	0.005	0.005	-0.002	0.016	0.018	-0.009	0.022	0.031
A:C	-0.007	0.005	0.012	-0.01	0.014	0.024	-0.012	0.023	0.035
A:D	-0.001	0.003	0.004	-0.006	0.018	0.024	-0.013	0.029	0.042
A:E	0	0.007	0.007	-0.005	-0.001	0.004	-0.012	0.012	0.024
A:F	-0.005	-0.015	-0.010	-0.009	0.003	0.012	-0.013	0.021	0.034
B:C	0.011	0.013	0.002	0.002	0.02	0.018	-0.009	0.043	0.052
B:D	0.002	0	-0.002	0	0.01	0.010	-0.007	0.024	0.031
B:E	0.004	0.015	0.011	0.003	0.021	0.018	0.003	0.037	0.034
B:F	0.004	0.008	0.004	-0.002	0.019	0.021	-0.013	0.022	0.035
C:D	-0.006	0.004	0.010	-0.009	0.005	0.014	-0.016	0.014	0.030
C:E	-0.056	-0.041	0.015	-0.079	-0.032	0.047	-0.091	-0.016	0.075
C:F	-0.019	-0.001	0.018	-0.021	-0.006	0.015	-0.027	0.01	0.037
D:E	0	-0.008	-0.008	-0.006	-0.002	0.004	-0.01	0.019	0.029
D:F	-0.003	0.008	0.011	-0.004	0.014	0.018	-0.01	0.025	0.035
E:F	-0.006	-0.004	0.002	-0.015	0.005	0.020	-0.02	0.03	0.050

Table B.3.5 - Coefficient bias for two random outliers

	Coefficients - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	-0.014	-0.014	0.000	-0.02	-0.02	0.000	-0.026	-0.026	0.000
A	-0.049	-0.032	0.017	-0.059	-0.045	0.014	-0.068	-0.058	0.010
B	0.024	-0.002	-0.026	0.036	-0.008	-0.044	0.048	0.004	-0.044
C	0.166	0.09	-0.076	0.166	0.078	-0.088	0.167	0.06	-0.107
D	-0.037	-0.004	0.033	-0.054	-0.016	0.038	-0.072	-0.025	0.047
E	0.191	0.091	-0.100	0.204	0.071	-0.133	0.216	0.05	-0.166
F	-0.153	-0.079	0.074	-0.149	-0.05	0.099	-0.146	-0.031	0.115
A:B	-0.018	-0.018	0.000	-0.034	-0.034	0.000	-0.051	-0.051	0.000
A:C	0.002	0.002	0.000	0	0	0.000	-0.001	-0.001	0.000
A:D	-0.085	-0.085	0.000	-0.124	-0.124	0.000	-0.163	-0.163	0.000
A:E	0.017	0.017	0.000	0.026	0.026	0.000	0.035	0.035	0.000
A:F	0.04	0.04	0.000	0.05	0.05	0.000	0.061	0.061	0.000
B:C	-0.02	-0.02	0.000	-0.028	-0.028	0.000	-0.036	-0.036	0.000
B:D	-0.027	-0.027	0.000	-0.039	-0.039	0.000	-0.05	-0.05	0.000
B:E	0.054	0.054	0.000	0.075	0.075	0.000	0.097	0.097	0.000
B:F	0.066	0.066	0.000	0.094	0.094	0.000	0.123	0.123	0.000
C:D	-0.045	-0.045	0.000	-0.059	-0.059	0.000	-0.072	-0.072	0.000
C:E	0.152	0.152	0.000	0.145	0.145	0.000	0.139	0.139	0.000
C:F	-0.006	-0.006	0.000	0.029	0.029	0.000	0.063	0.063	0.000
D:E	-0.037	-0.037	0.000	-0.055	-0.055	0.000	-0.074	-0.074	0.000
D:F	-0.024	-0.024	0.000	-0.038	-0.038	0.000	-0.052	-0.052	0.000
E:F	-0.02	-0.02	0.000	-0.049	-0.049	0.000	-0.078	-0.078	0.000

Table B.3.6 – P-Value bias for two random outliers

	P-values - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.001	0.006	0.005	-0.001	0.006	0.007	-0.004	0.008	0.012
B	-0.008	0.006	0.014	-0.011	0.008	0.019	-0.01	0.012	0.022
C	0.089	0.066	-0.023	0.119	0.083	-0.036	0.141	0.093	-0.048
D	-0.01	-0.001	0.009	-0.016	-0.004	0.012	-0.018	0	0.018
E	0.088	0.069	-0.019	0.112	0.083	-0.029	0.128	0.093	-0.035
F	0.09	0.071	-0.019	0.118	0.086	-0.032	0.135	0.098	-0.037
A:B	-0.011	-0.022	-0.011	-0.015	-0.042	-0.027	-0.017	-0.064	-0.047
A:C	0.011	0.001	-0.010	0.004	-0.024	-0.028	0	-0.049	-0.049
A:D	0.006	-0.001	-0.007	-0.002	-0.025	-0.023	-0.008	-0.051	-0.043
A:E	0.002	-0.008	-0.010	0.002	-0.026	-0.028	0.001	-0.046	-0.047
A:F	0.005	-0.004	-0.009	0.005	-0.021	-0.026	0.003	-0.045	-0.048
B:C	-0.004	-0.015	-0.011	-0.012	-0.037	-0.025	-0.014	-0.06	-0.046
B:D	0.001	-0.009	-0.010	-0.001	-0.026	-0.025	-0.001	-0.046	-0.045
B:E	-0.002	-0.009	-0.007	-0.007	-0.031	-0.024	-0.011	-0.057	-0.046
B:F	-0.012	-0.021	-0.009	-0.019	-0.045	-0.026	-0.024	-0.071	-0.047
C:D	-0.004	-0.013	-0.009	-0.002	-0.028	-0.026	0.003	-0.044	-0.047
C:E	0.089	0.079	-0.010	0.109	0.083	-0.026	0.122	0.076	-0.046
C:F	0.028	0.019	-0.009	0.036	0.009	-0.027	0.042	-0.005	-0.047
D:E	0.001	-0.006	-0.007	-0.005	-0.029	-0.024	-0.009	-0.054	-0.045
D:F	-0.01	-0.017	-0.007	-0.016	-0.04	-0.024	-0.021	-0.066	-0.045
E:F	0.004	-0.004	-0.008	0.001	-0.024	-0.025	0.001	-0.045	-0.046

Table B.3.7 – Standard error bias for two random outliers

	Standard Error - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
B	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
C	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
D	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
E	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A:B	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A:C	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A:D	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A:E	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
A:F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
B:C	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
B:D	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
B:E	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
B:F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
C:D	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
C:E	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
C:F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
D:E	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
D:F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446
E:F	0.555	0.492	-0.063	0.935	0.716	-0.219	1.359	0.913	-0.446

Table B.3.8 - Power bias for two random outliers

	Power - Two outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.002	0.014	0.012	-0.002	0.01	0.012	-0.008	-0.005	0.003
B	-0.001	-0.011	-0.010	-0.005	-0.017	-0.012	-0.005	-0.027	-0.022
C	-0.088	-0.085	0.003	-0.115	-0.094	0.021	-0.127	-0.105	0.022
D	0.012	-0.008	-0.020	0.011	-0.011	-0.022	0.008	-0.015	-0.023
E	-0.104	-0.065	0.039	-0.115	-0.086	0.029	-0.131	-0.098	0.033
F	-0.083	-0.053	0.030	-0.118	-0.077	0.041	-0.132	-0.096	0.036
A:B	0.001	0.011	0.010	0	0.016	0.016	-0.005	0.035	0.040
A:C	-0.002	-0.002	0.000	0	0.019	0.019	-0.005	0.033	0.038
A:D	0.004	0.015	0.011	-0.003	0.023	0.026	-0.006	0.036	0.042
A:E	0	0.006	0.006	0.002	0.01	0.008	-0.004	0.022	0.026
A:F	-0.003	-0.01	-0.007	-0.008	-0.001	0.007	-0.009	0.02	0.029
B:C	0.009	0.014	0.005	0.004	0.026	0.022	-0.002	0.044	0.046
B:D	0	0.008	0.008	0	0.015	0.015	-0.003	0.029	0.032
B:E	0.007	0.01	0.003	0.003	0.018	0.015	0	0.035	0.035
B:F	0	0.008	0.008	-0.006	0.015	0.021	-0.012	0.036	0.048
C:D	-0.015	-0.01	0.005	-0.014	-0.005	0.009	-0.016	0.006	0.022
C:E	-0.077	-0.071	0.006	-0.105	-0.076	0.029	-0.125	-0.076	0.049
C:F	-0.03	-0.012	0.018	-0.04	-0.012	0.028	-0.052	-0.009	0.043
D:E	-0.005	-0.003	0.002	-0.007	0.007	0.014	-0.008	0.02	0.028
D:F	-0.009	-0.001	0.008	-0.009	0.018	0.027	-0.009	0.035	0.044
E:F	-0.01	0.002	0.012	-0.01	0.013	0.023	-0.016	0.021	0.037

Table B.3.9 - Coefficient bias for three random outliers

	Coefficients- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.024	0.024	0.000	0.024	0.024	0.000	0.025	0.025	0.000
A	-0.023	-0.043	-0.020	-0.029	-0.062	-0.033	-0.035	-0.075	-0.040
B	0.01	-0.03	-0.040	0.02	-0.032	-0.052	0.03	-0.04	-0.070
C	0.294	0.179	-0.115	0.31	0.163	-0.147	0.326	0.145	-0.181
D	0.023	0.078	0.055	0.029	0.087	0.058	0.035	0.103	0.068
E	0.299	0.169	-0.130	0.325	0.168	-0.157	0.35	0.172	-0.178
F	-0.217	-0.153	0.064	-0.209	-0.114	0.095	-0.2	-0.098	0.102
A:B	-0.031	-0.031	0.000	-0.044	-0.044	0.000	-0.056	-0.056	0.000
A:C	0.014	0.014	0.000	0.018	0.018	0.000	0.022	0.022	0.000
A:D	-0.093	-0.093	0.000	-0.133	-0.133	0.000	-0.174	-0.174	0.000
A:E	-0.002	-0.002	0.000	-0.001	-0.001	0.000	0	0	0.000
A:F	0.052	0.052	0.000	0.066	0.066	0.000	0.081	0.081	0.000
B:C	-0.04	-0.04	0.000	-0.058	-0.058	0.000	-0.077	-0.077	0.000
B:D	-0.056	-0.056	0.000	-0.079	-0.079	0.000	-0.102	-0.102	0.000
B:E	0.067	0.067	0.000	0.095	0.095	0.000	0.123	0.123	0.000
B:F	0.064	0.064	0.000	0.098	0.098	0.000	0.133	0.133	0.000
C:D	-0.073	-0.073	0.000	-0.106	-0.106	0.000	-0.14	-0.14	0.000
C:E	0.206	0.206	0.000	0.187	0.187	0.000	0.168	0.168	0.000
C:F	-0.047	-0.047	0.000	-0.016	-0.016	0.000	0.016	0.016	0.000
D:E	-0.06	-0.06	0.000	-0.091	-0.091	0.000	-0.123	-0.123	0.000
D:F	-0.006	-0.006	0.000	-0.013	-0.013	0.000	-0.02	-0.02	0.000
E:F	0.034	0.034	0.000	0.017	0.017	0.000	0.001	0.001	0.000

Table B.3.10 – P-Value bias for three random outliers

	P-values- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0.005	0.004	-0.001	0.005	0.005	0.000	0.005	0.007	0.002
B	0.005	0.012	0.007	0.003	0.014	0.011	0	0.019	0.019
C	0.121	0.094	-0.027	0.153	0.118	-0.035	0.174	0.133	-0.041
D	-0.006	-0.002	0.004	-0.008	0.002	0.010	-0.012	0.003	0.015
E	0.108	0.091	-0.017	0.133	0.111	-0.022	0.146	0.12	-0.026
F	0.11	0.094	-0.016	0.137	0.118	-0.019	0.157	0.133	-0.024
A:B	-0.014	-0.021	-0.007	-0.017	-0.034	-0.017	-0.02	-0.051	-0.031
A:C	0.001	-0.006	-0.007	-0.003	-0.021	-0.018	-0.006	-0.037	-0.031
A:D	0.009	0.002	-0.007	0.002	-0.014	-0.016	-0.003	-0.033	-0.030
A:E	-0.004	-0.011	-0.007	-0.008	-0.024	-0.016	-0.01	-0.041	-0.031
A:F	0.011	0.002	-0.009	0.008	-0.01	-0.018	0.006	-0.026	-0.032
B:C	-0.013	-0.022	-0.009	-0.018	-0.038	-0.020	-0.021	-0.056	-0.035
B:D	-0.007	-0.015	-0.008	-0.011	-0.028	-0.017	-0.015	-0.045	-0.030
B:E	-0.002	-0.007	-0.005	-0.004	-0.019	-0.015	-0.006	-0.035	-0.029
B:F	-0.01	-0.016	-0.006	-0.014	-0.028	-0.014	-0.016	-0.044	-0.028
C:D	-0.002	-0.009	-0.007	-0.001	-0.019	-0.018	-0.003	-0.036	-0.033
C:E	0.105	0.097	-0.008	0.123	0.105	-0.018	0.137	0.106	-0.031
C:F	0.041	0.032	-0.009	0.049	0.031	-0.018	0.053	0.022	-0.031
D:E	-0.009	-0.017	-0.008	-0.014	-0.03	-0.016	-0.017	-0.049	-0.032
D:F	-0.029	-0.035	-0.006	-0.033	-0.048	-0.015	-0.035	-0.064	-0.029
E:F	0.004	0	-0.004	0.003	-0.011	-0.014	0	-0.029	-0.029

Table B.3.11 – Standard error bias for three random outliers

	Standard Error- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
B	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
C	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
D	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
E	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A:B	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A:C	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A:D	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A:E	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
A:F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
B:C	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
B:D	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
B:E	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
B:F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
C:D	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
C:E	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
C:F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
D:E	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
D:F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334
E:F	0.779	0.725	-0.054	1.286	1.132	-0.154	1.838	1.504	-0.334

Table B.3.12 - Power bias for three random outliers

	Power- Three outliers								
	3 SD			4 SD			5 SD		
	LSquares	Huber	Difference	LSquares	Huber	Difference	LSquares	Huber	Difference
(Intercept)	0	0	0.000	0	0	0.000	0	0	0.000
A	0	0.021	0.021	0.002	0.012	0.010	0	0.006	0.006
B	0.009	-0.004	-0.013	0.004	-0.007	-0.011	0.004	-0.02	-0.024
C	-0.129	-0.111	0.018	-0.145	-0.132	0.013	-0.159	-0.143	0.016
D	0.007	-0.002	-0.009	0.007	-0.012	-0.019	0.004	-0.018	-0.022
E	-0.121	-0.08	0.041	-0.138	-0.094	0.044	-0.146	-0.117	0.029
F	-0.107	-0.092	0.015	-0.126	-0.12	0.006	-0.151	-0.128	0.023
A:B	0.005	0.009	0.004	0.006	0.021	0.015	0.011	0.029	0.018
A:C	-0.005	0.011	0.016	0.001	0.016	0.015	0.002	0.031	0.029
A:D	-0.001	0.009	0.010	-0.003	0.013	0.016	-0.005	0.029	0.034
A:E	0.006	0.008	0.002	0.011	0.027	0.016	0.01	0.028	0.018
A:F	0.006	-0.001	-0.007	0.004	0.005	0.001	0.005	0.018	0.013
B:C	0.012	0.015	0.003	0.01	0.015	0.005	0.005	0.03	0.025
B:D	0.003	-0.002	-0.005	-0.001	0.011	0.012	-0.002	0.021	0.023
B:E	0.012	0.01	-0.002	0.013	0.018	0.005	0.011	0.027	0.016
B:F	-0.002	-0.001	0.001	0.003	0.012	0.009	0.006	0.02	0.014
C:D	-0.006	0.003	0.009	-0.003	0.002	0.005	-0.007	0.016	0.023
C:E	-0.084	-0.078	0.006	-0.109	-0.086	0.023	-0.129	-0.094	0.035
C:F	-0.03	-0.023	0.007	-0.033	-0.013	0.020	-0.032	-0.004	0.028
D:E	-0.004	-0.001	0.003	0	0.01	0.010	0.003	0.02	0.017
D:F	0	0.007	0.007	0.006	0.019	0.013	0.011	0.028	0.017
E:F	-0.008	0	0.008	-0.011	0.005	0.016	-0.013	0.02	0.033

Appendix C - Raw data of estimates

C.1 - Fixed outlier

Table C.1.1 – Coefficient estimates for one fixed outlier

| | Least Squares Coefficients | | | | | | | Huber Coefficients | | | | | | |
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.724	155.229	1.505	155.612	1.888	155.995	2.271	153.724	155.229	1.505	155.612	1.888	155.995	2.271
A	0.078	-1.427	-1.505	-1.81	-1.888	-2.193	-2.271	0.071	-0.99	-1.061	-1.039	-1.11	-1.054	-1.125
B	-0.012	1.493	1.505	1.876	1.888	2.259	2.271	-0.007	1.021	1.028	1.066	1.073	1.083	1.09
C	-2.671	-1.166	1.505	-0.783	1.888	-0.4	2.271	-2.632	-1.604	1.028	-1.558	1.074	-1.54	1.092
D	-0.014	1.49	1.504	1.873	1.887	2.256	2.27	-0.037	1.02	1.057	1.066	1.103	1.084	1.121
E	-2.593	-1.088	1.505	-0.705	1.888	-0.322	2.271	-2.589	-1.525	1.064	-1.478	1.111	-1.462	1.127
F	2.571	1.067	-1.504	0.683	-1.888	0.3	-2.271	2.568	1.53	-1.038	1.483	-1.085	1.465	-1.103
A:B	-0.055	-1.56	-1.505	-1.943	-1.888	-2.326	-2.271	-0.055	-1.56	-1.505	-1.943	-1.888	-2.326	-2.271
A:C	-0.01	-1.514	-1.504	-1.897	-1.887	-2.281	-2.271	-0.01	-1.514	-1.504	-1.897	-1.887	-2.281	-2.271
A:D	0.092	-1.413	-1.505	-1.796	-1.888	-2.179	-2.271	0.092	-1.413	-1.505	-1.796	-1.888	-2.179	-2.271
A:E	0.013	-1.492	-1.505	-1.875	-1.888	-2.258	-2.271	0.013	-1.492	-1.505	-1.875	-1.888	-2.258	-2.271
A:F	0.149	1.653	1.504	2.037	1.888	2.42	2.271	0.149	1.653	1.504	2.037	1.888	2.42	2.271
B:C	-0.045	1.46	1.505	1.843	1.888	2.226	2.271	-0.045	1.46	1.505	1.843	1.888	2.226	2.271
B:D	0.005	1.509	1.504	1.893	1.888	2.276	2.271	0.005	1.509	1.504	1.893	1.888	2.276	2.271
B:E	-0.124	1.381	1.505	1.764	1.888	2.147	2.271	-0.124	1.381	1.505	1.764	1.888	2.147	2.271
B:F	0.05	-1.455	-1.505	-1.838	-1.888	-2.221	-2.271	0.05	-1.455	-1.505	-1.838	-1.888	-2.221	-2.271
C:D	0.065	1.569	1.504	1.953	1.888	2.336	2.271	0.065	1.569	1.504	1.953	1.888	2.336	2.271
C:E	-2.554	-1.05	1.504	-0.666	1.888	-0.283	2.271	-2.554	-1.05	1.504	-0.666	1.888	-0.283	2.271
C:F	1.5	-0.004	-1.504	-0.387	-1.887	-0.771	-2.271	1.5	-0.004	-1.504	-0.387	-1.887	-0.771	-2.271
D:E	-0.144	1.361	1.505	1.744	1.888	2.127	2.271	-0.144	1.361	1.505	1.744	1.888	2.127	2.271
D:F	-0.034	-1.538	-1.504	-1.922	-1.888	-2.305	-2.271	-0.034	-1.538	-1.504	-1.922	-1.888	-2.305	-2.271
E:F	-0.677	-2.182	-1.505	-2.565	-1.888	-2.948	-2.271	-0.677	-2.182	-1.505	-2.565	-1.888	-2.948	-2.271

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Table C.1.2 – P-Value estimates for one fixed outlier

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.495	0.008	0.488	0.001	0.48	-0.007	0.472	0.488	0.016	0.488	0.016	0.488	0.016
B	0.5	0.492	-0.008	0.485	-0.015	0.474	-0.026	0.495	0.493	-0.002	0.494	-0.001	0.494	-0.001
C	0.285	0.53	0.245	0.59	0.305	0.638	0.353	0.297	0.449	0.152	0.456	0.159	0.457	0.16
D	0.499	0.498	-0.001	0.493	-0.006	0.481	-0.018	0.494	0.501	0.007	0.501	0.007	0.501	0.007
E	0.297	0.532	0.235	0.591	0.294	0.637	0.34	0.305	0.457	0.152	0.465	0.16	0.467	0.162
F	0.299	0.531	0.232	0.588	0.289	0.633	0.334	0.306	0.457	0.151	0.466	0.16	0.468	0.162
A:B	0.499	0.48	-0.019	0.472	-0.027	0.462	-0.037	0.501	0.458	-0.043	0.425	-0.076	0.386	-0.115
A:C	0.5	0.489	-0.011	0.481	-0.019	0.47	-0.03	0.502	0.468	-0.034	0.435	-0.067	0.395	-0.107
A:D	0.499	0.5	0.001	0.495	-0.004	0.485	-0.014	0.502	0.477	-0.025	0.447	-0.055	0.407	-0.095
A:E	0.497	0.491	-0.006	0.484	-0.013	0.473	-0.024	0.498	0.469	-0.029	0.437	-0.061	0.396	-0.102
A:F	0.488	0.48	-0.008	0.47	-0.018	0.459	-0.029	0.491	0.459	-0.032	0.425	-0.066	0.384	-0.107
B:C	0.496	0.492	-0.004	0.486	-0.01	0.477	-0.019	0.497	0.471	-0.026	0.44	-0.057	0.401	-0.096
B:D	0.497	0.492	-0.005	0.485	-0.012	0.474	-0.023	0.499	0.471	-0.028	0.441	-0.058	0.402	-0.097
B:E	0.495	0.509	0.014	0.5	0.005	0.487	-0.008	0.497	0.487	-0.01	0.454	-0.043	0.41	-0.087
B:F	0.505	0.501	-0.004	0.493	-0.012	0.481	-0.024	0.508	0.478	-0.03	0.445	-0.063	0.402	-0.106
C:D	0.499	0.481	-0.018	0.473	-0.026	0.464	-0.035	0.501	0.461	-0.04	0.428	-0.073	0.389	-0.112
C:E	0.296	0.53	0.234	0.59	0.294	0.638	0.342	0.3	0.507	0.207	0.544	0.244	0.566	0.266
C:F	0.411	0.567	0.156	0.594	0.183	0.612	0.201	0.414	0.545	0.131	0.549	0.135	0.538	0.124
D:E	0.502	0.511	0.009	0.502	0	0.491	-0.011	0.504	0.489	-0.015	0.456	-0.048	0.415	-0.089
D:F	0.502	0.491	-0.011	0.479	-0.023	0.467	-0.035	0.504	0.469	-0.035	0.433	-0.071	0.391	-0.113
E:F	0.484	0.417	-0.067	0.404	-0.08	0.391	-0.093	0.487	0.397	-0.09	0.359	-0.128	0.316	-0.171

Table C.1.3 – Standard error estimates for one fixed outlier

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
B	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
C	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
D	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
E	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A:B	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A:C	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A:D	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A:E	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
A:F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
B:C	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
B:D	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
B:E	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
B:F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
C:D	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
C:E	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
C:F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
D:E	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
D:F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4
E:F	1.896	2.396	0.5	2.653	0.757	2.937	1.041	1.947	2.274	0.327	2.327	0.38	2.347	0.4

Table C.1.4 – Power estimates for one fixed outlier

| | Least Squares Power | | | | | | | Huber Power | | | | | | |
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.062	0.044	-0.018	0.041	-0.021	0.04	-0.022	0.072	0.07	-0.002	0.072	0	0.069	-0.003
B	0.043	0.041	-0.002	0.037	-0.006	0.03	-0.013	0.068	0.062	-0.006	0.058	-0.01	0.058	-0.01
C	0.252	0.024	-0.228	0.006	-0.246	0.001	-0.251	0.24	0.095	-0.145	0.09	-0.15	0.09	-0.15
D	0.044	0.047	0.003	0.041	-0.003	0.035	-0.009	0.057	0.058	0.001	0.051	-0.006	0.048	-0.009
E	0.233	0.017	-0.216	0.004	-0.229	0.003	-0.23	0.246	0.085	-0.161	0.083	-0.163	0.083	-0.163
F	0.226	0.027	-0.199	0.009	-0.217	0.005	-0.221	0.246	0.107	-0.139	0.104	-0.142	0.104	-0.142
A:B	0.052	0.054	0.002	0.048	-0.004	0.032	-0.02	0.059	0.075	0.016	0.087	0.028	0.115	0.056
A:C	0.051	0.041	-0.01	0.032	-0.019	0.024	-0.027	0.056	0.071	0.015	0.083	0.027	0.108	0.052
A:D	0.049	0.042	-0.007	0.032	-0.017	0.027	-0.022	0.061	0.071	0.01	0.089	0.028	0.113	0.052
A:E	0.049	0.04	-0.009	0.035	-0.014	0.029	-0.02	0.062	0.076	0.014	0.084	0.022	0.11	0.048
A:F	0.043	0.048	0.005	0.041	-0.002	0.031	-0.012	0.064	0.082	0.018	0.102	0.038	0.121	0.057
B:C	0.046	0.035	-0.011	0.03	-0.016	0.022	-0.024	0.06	0.073	0.013	0.086	0.026	0.107	0.047
B:D	0.048	0.046	-0.002	0.038	-0.01	0.026	-0.022	0.068	0.077	0.009	0.086	0.018	0.114	0.046
B:E	0.046	0.032	-0.014	0.026	-0.02	0.021	-0.025	0.051	0.064	0.013	0.082	0.031	0.11	0.059
B:F	0.05	0.04	-0.01	0.034	-0.016	0.028	-0.022	0.057	0.069	0.012	0.09	0.033	0.11	0.053
C:D	0.043	0.05	0.007	0.043	0	0.034	-0.009	0.054	0.084	0.03	0.105	0.051	0.125	0.071
C:E	0.208	0.019	-0.189	0.007	-0.201	0.002	-0.206	0.209	0.049	-0.16	0.037	-0.172	0.035	-0.174
C:F	0.119	0.017	-0.102	0.009	-0.11	0.008	-0.111	0.134	0.044	-0.09	0.036	-0.098	0.035	-0.099
D:E	0.049	0.035	-0.014	0.03	-0.019	0.028	-0.021	0.063	0.062	-0.001	0.084	0.021	0.1	0.037
D:F	0.051	0.045	-0.006	0.041	-0.01	0.03	-0.021	0.064	0.069	0.005	0.089	0.025	0.116	0.052
E:F	0.068	0.09	0.022	0.078	0.01	0.07	0.002	0.069	0.122	0.053	0.149	0.08	0.179	0.11

Table C.1.5 – Coefficient estimates for two fixed outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.724	156.16	2.436	156.926	3.202	157.692	3.968	153.724	156.16	2.436	156.926	3.202	157.692	3.968
A	0.078	-2.358	-2.436	-3.124	-3.202	-3.89	-3.968	0.071	-1.659	-1.73	-1.814	-1.885	-1.872	-1.943
B	-0.012	0.562	0.574	0.562	0.574	0.562	0.574	-0.007	0.181	0.188	0.065	0.072	0.019	0.026
C	-2.671	-0.235	2.436	0.531	3.202	1.297	3.968	-2.632	-0.91	1.722	-0.753	1.879	-0.692	1.94
D	-0.014	0.559	0.573	0.559	0.573	0.559	0.573	-0.037	0.167	0.204	0.056	0.093	0.013	0.05
E	-2.593	-2.019	0.574	-2.019	0.574	-2.019	0.574	-2.589	-2.387	0.202	-2.502	0.087	-2.546	0.043
F	2.571	1.997	-0.574	1.997	-0.574	1.997	-0.574	2.568	2.389	-0.179	2.503	-0.065	2.548	-0.02
A:B	-0.055	-0.629	-0.574	-0.629	-0.574	-0.629	-0.574	-0.055	-0.629	-0.574	-0.629	-0.574	-0.629	-0.574
A:C	-0.01	-2.445	-2.435	-3.212	-3.202	-3.978	-3.968	-0.01	-2.445	-2.435	-3.212	-3.202	-3.978	-3.968
A:D	0.092	-0.482	-0.574	-0.482	-0.574	-0.482	-0.574	0.092	-0.482	-0.574	-0.482	-0.574	-0.482	-0.574
A:E	0.013	-0.561	-0.574	-0.561	-0.574	-0.561	-0.574	0.013	-0.561	-0.574	-0.561	-0.574	-0.561	-0.574
A:F	0.149	0.722	0.573	0.722	0.573	0.722	0.573	0.149	0.722	0.573	0.722	0.573	0.722	0.573
B:C	-0.045	0.529	0.574	0.529	0.574	0.529	0.574	-0.045	0.529	0.574	0.529	0.574	0.529	0.574
B:D	0.005	2.44	2.435	3.207	3.202	3.973	3.968	0.005	2.44	2.435	3.207	3.202	3.973	3.968
B:E	-0.124	2.312	2.436	3.078	3.202	3.845	3.969	-0.124	2.312	2.436	3.078	3.202	3.845	3.969
B:F	0.05	-2.386	-2.436	-3.152	-3.202	-3.918	-3.968	0.05	-2.386	-2.436	-3.152	-3.202	-3.918	-3.968
C:D	0.065	0.639	0.574	0.639	0.574	0.639	0.574	0.065	0.639	0.574	0.639	0.574	0.639	0.574
C:E	-2.554	-1.981	0.573	-1.981	0.573	-1.981	0.573	-2.554	-1.981	0.573	-1.981	0.573	-1.981	0.573
C:F	1.5	0.927	-0.573	0.927	-0.573	0.927	-0.573	1.5	0.927	-0.573	0.927	-0.573	0.927	-0.573
D:E	-0.144	2.292	2.436	3.058	3.202	3.825	3.969	-0.144	2.292	2.436	3.058	3.202	3.825	3.969
D:F	-0.034	-2.469	-2.435	-3.236	-3.202	-4.002	-3.968	-0.034	-2.469	-2.435	-3.236	-3.202	-4.002	-3.968
E:F	-0.677	-3.113	-2.436	-3.879	-3.202	-4.645	-3.968	-0.677	-3.113	-2.436	-3.879	-3.202	-4.645	-3.968

Table C.1.6 – P-Value estimates for two fixed outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.431	-0.056	0.391	-0.096	0.355	-0.132	0.472	0.465	-0.007	0.466	-0.006	0.47	-0.002
B	0.5	0.603	0.103	0.649	0.149	0.69	0.19	0.495	0.555	0.06	0.566	0.071	0.57	0.075
C	0.285	0.615	0.33	0.655	0.37	0.647	0.362	0.297	0.526	0.229	0.544	0.247	0.548	0.251
D	0.499	0.6	0.101	0.646	0.147	0.687	0.188	0.494	0.559	0.065	0.568	0.074	0.572	0.078
E	0.297	0.474	0.177	0.526	0.229	0.574	0.277	0.305	0.407	0.102	0.412	0.107	0.416	0.111
F	0.299	0.47	0.171	0.521	0.222	0.569	0.27	0.306	0.395	0.089	0.401	0.095	0.405	0.099
A:B	0.499	0.585	0.086	0.632	0.133	0.674	0.175	0.501	0.558	0.057	0.576	0.075	0.586	0.085
A:C	0.5	0.418	-0.082	0.374	-0.126	0.339	-0.161	0.502	0.395	-0.107	0.32	-0.182	0.245	-0.257
A:D	0.499	0.599	0.1	0.645	0.146	0.686	0.187	0.502	0.571	0.069	0.589	0.087	0.599	0.097
A:E	0.497	0.595	0.098	0.641	0.144	0.682	0.185	0.498	0.568	0.07	0.586	0.088	0.594	0.096
A:F	0.488	0.594	0.106	0.64	0.152	0.681	0.193	0.491	0.569	0.078	0.588	0.097	0.597	0.106
B:C	0.496	0.591	0.095	0.638	0.142	0.68	0.184	0.497	0.564	0.067	0.583	0.086	0.593	0.096
B:D	0.497	0.425	-0.072	0.382	-0.115	0.345	-0.152	0.499	0.404	-0.095	0.329	-0.17	0.251	-0.248
B:E	0.495	0.438	-0.057	0.395	-0.1	0.358	-0.137	0.497	0.414	-0.083	0.34	-0.157	0.264	-0.233
B:F	0.505	0.425	-0.08	0.381	-0.124	0.346	-0.159	0.508	0.4	-0.108	0.324	-0.184	0.25	-0.258
C:D	0.499	0.588	0.089	0.634	0.135	0.676	0.177	0.501	0.561	0.06	0.578	0.077	0.587	0.086
C:E	0.296	0.473	0.177	0.526	0.23	0.574	0.278	0.3	0.448	0.148	0.467	0.167	0.477	0.177
C:F	0.411	0.567	0.156	0.615	0.204	0.658	0.247	0.414	0.539	0.125	0.558	0.144	0.567	0.153
D:E	0.502	0.442	-0.06	0.399	-0.103	0.361	-0.141	0.504	0.419	-0.085	0.346	-0.158	0.268	-0.236
D:F	0.502	0.417	-0.085	0.375	-0.127	0.341	-0.161	0.504	0.396	-0.108	0.323	-0.181	0.25	-0.254
E:F	0.484	0.336	-0.148	0.301	-0.183	0.275	-0.209	0.487	0.315	-0.172	0.25	-0.237	0.188	-0.299

Table C.1.7 – Standard error estimates for two fixed outliers

	Least Squares Standard Error							Huber Standard Error						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
B	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
C	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
D	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
E	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A:B	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A:C	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A:D	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A:E	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
A:F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
B:C	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
B:D	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
B:E	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
B:F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
C:D	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
C:E	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
C:F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
D:E	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
D:F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812
E:F	1.896	2.658	0.762	3.109	1.213	3.602	1.706	1.947	2.508	0.561	2.671	0.724	2.759	0.812

Table C.1.8 – Power estimates for two fixed outliers

	Least Squares Power							Huber Power						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.062	0.06	-0.002	0.056	-0.006	0.049	-0.013	0.072	0.077	0.005	0.073	0.001	0.068	-0.004
B	0.043	0.007	-0.036	0.003	-0.04	0	-0.043	0.068	0.032	-0.036	0.034	-0.034	0.03	-0.038
C	0.252	0.009	-0.243	0.004	-0.248	0.003	-0.249	0.24	0.046	-0.194	0.043	-0.197	0.04	-0.2
D	0.044	0.008	-0.036	0.003	-0.041	0	-0.044	0.057	0.035	-0.022	0.031	-0.026	0.029	-0.028
E	0.233	0.034	-0.199	0.003	-0.23	0.001	-0.232	0.246	0.127	-0.119	0.118	-0.128	0.117	-0.129
F	0.226	0.032	-0.194	0.015	-0.211	0.002	-0.224	0.246	0.128	-0.118	0.124	-0.122	0.12	-0.126
A:B	0.052	0.013	-0.039	0.001	-0.051	0	-0.052	0.059	0.024	-0.035	0.018	-0.041	0.017	-0.042
A:C	0.051	0.054	0.003	0.045	-0.006	0.035	-0.016	0.056	0.104	0.048	0.139	0.083	0.192	0.136
A:D	0.049	0.007	-0.042	0	-0.049	0	-0.049	0.061	0.02	-0.041	0.017	-0.044	0.016	-0.045
A:E	0.049	0.011	-0.038	0.003	-0.046	0	-0.049	0.062	0.03	-0.032	0.025	-0.037	0.021	-0.041
A:F	0.043	0.005	-0.038	0.001	-0.042	0	-0.043	0.064	0.026	-0.038	0.025	-0.039	0.023	-0.041
B:C	0.046	0.003	-0.043	0	-0.046	0	-0.046	0.06	0.02	-0.04	0.02	-0.04	0.018	-0.042
B:D	0.048	0.054	0.006	0.046	-0.002	0.039	-0.009	0.068	0.098	0.03	0.13	0.062	0.19	0.122
B:E	0.046	0.06	0.014	0.044	-0.002	0.031	-0.015	0.051	0.099	0.048	0.129	0.078	0.2	0.149
B:F	0.05	0.054	0.004	0.045	-0.005	0.031	-0.019	0.057	0.096	0.039	0.146	0.089	0.204	0.147
C:D	0.043	0.01	-0.033	0.003	-0.04	0.001	-0.042	0.054	0.027	-0.027	0.025	-0.029	0.025	-0.029
C:E	0.208	0.03	-0.178	0.009	-0.199	0.001	-0.207	0.209	0.067	-0.142	0.058	-0.151	0.056	-0.153
C:F	0.119	0.014	-0.105	0.005	-0.114	0	-0.119	0.134	0.039	-0.095	0.034	-0.1	0.031	-0.103
D:E	0.049	0.052	0.003	0.045	-0.004	0.032	-0.017	0.063	0.093	0.03	0.131	0.068	0.198	0.135
D:F	0.051	0.066	0.015	0.058	0.007	0.041	-0.01	0.064	0.104	0.04	0.148	0.084	0.191	0.127
E:F	0.068	0.116	0.048	0.099	0.031	0.082	0.014	0.069	0.164	0.095	0.208	0.139	0.277	0.208

Table C.1.9 – Coefficient estimates for three fixed outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.724	157.224	3.5	158.373	4.649	159.523	5.799	153.724	157.224	3.5	158.373	4.649	159.523	5.799
A	0.078	-3.422	-3.5	-4.572	-4.65	-5.721	-5.799	0.071	-2.819	-2.89	-3.297	-3.368	-3.57	-3.641
B	-0.012	1.626	1.638	2.009	2.021	2.392	2.404	-0.007	1.531	1.538	1.843	1.85	2.068	2.075
C	-2.671	-1.3	1.371	-0.917	1.754	-0.533	2.138	-2.632	-1.742	0.89	-1.717	0.915	-1.739	0.893
D	-0.014	-0.505	-0.491	-0.888	-0.874	-1.271	-1.257	-0.037	-0.548	-0.511	-0.729	-0.692	-0.806	-0.769
E	-2.593	-0.955	1.638	-0.572	2.021	-0.189	2.404	-2.589	-1.018	1.571	-0.703	1.886	-0.478	2.111
F	2.571	0.933	-1.638	0.55	-2.021	0.167	-2.404	2.568	1.035	-1.533	0.727	-1.841	0.498	-2.07
A:B	-0.055	-1.693	-1.638	-2.076	-2.021	-2.46	-2.405	-0.055	-1.693	-1.638	-2.076	-2.021	-2.46	-2.405
A:C	-0.01	-1.381	-1.371	-1.764	-1.754	-2.147	-2.137	-0.01	-1.381	-1.371	-1.764	-1.754	-2.147	-2.137
A:D	0.092	0.582	0.49	0.965	0.873	1.348	1.256	0.092	0.582	0.49	0.965	0.873	1.348	1.256
A:E	0.013	-1.625	-1.638	-2.008	-2.021	-2.391	-2.404	0.013	-1.625	-1.638	-2.008	-2.021	-2.391	-2.404
A:F	0.149	1.787	1.638	2.17	2.021	2.553	2.404	0.149	1.787	1.638	2.17	2.021	2.553	2.404
B:C	-0.045	-0.535	-0.49	-0.919	-0.874	-1.302	-1.257	-0.045	-0.535	-0.49	-0.919	-0.874	-1.302	-1.257
B:D	0.005	1.376	1.371	1.759	1.754	2.142	2.137	0.005	1.376	1.371	1.759	1.754	2.142	2.137
B:E	-0.124	3.376	3.5	4.526	4.65	5.675	5.799	-0.124	3.376	3.5	4.526	4.65	5.675	5.799
B:F	0.05	-3.45	-3.5	-4.6	-4.65	-5.749	-5.799	0.05	-3.45	-3.5	-4.6	-4.65	-5.749	-5.799
C:D	0.065	1.703	1.638	2.086	2.021	2.469	2.404	0.065	1.703	1.638	2.086	2.021	2.469	2.404
C:E	-2.554	-3.045	-0.491	-3.428	-0.874	-3.811	-1.257	-2.554	-3.045	-0.491	-3.428	-0.874	-3.811	-1.257
C:F	1.5	1.991	0.491	2.374	0.874	2.757	1.257	1.5	1.991	0.491	2.374	0.874	2.757	1.257
D:E	-0.144	1.228	1.372	1.611	1.755	1.994	2.138	-0.144	1.228	1.372	1.611	1.755	1.994	2.138
D:F	-0.034	-1.405	-1.371	-1.788	-1.754	-2.171	-2.137	-0.034	-1.405	-1.371	-1.788	-1.754	-2.171	-2.137
E:F	-0.677	-4.177	-3.5	-5.327	-4.65	-6.476	-5.799	-0.677	-4.177	-3.5	-5.327	-4.65	-6.476	-5.799

Table C.1.10 – P-Value estimates for three fixed outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.321	-0.166	0.26	-0.227	0.221	-0.266	0.472	0.39	-0.082	0.386	-0.086	0.391	-0.081
B	0.5	0.538	0.038	0.553	0.053	0.564	0.064	0.495	0.533	0.038	0.54	0.045	0.543	0.048
C	0.285	0.57	0.285	0.658	0.373	0.721	0.436	0.297	0.509	0.212	0.55	0.253	0.571	0.274
D	0.499	0.619	0.12	0.653	0.154	0.674	0.175	0.494	0.578	0.084	0.605	0.111	0.624	0.13
E	0.297	0.597	0.3	0.675	0.378	0.731	0.434	0.305	0.567	0.262	0.614	0.309	0.63	0.325
F	0.299	0.601	0.302	0.676	0.377	0.729	0.43	0.306	0.571	0.265	0.621	0.315	0.639	0.333
A:B	0.499	0.52	0.021	0.539	0.04	0.552	0.053	0.501	0.515	0.014	0.523	0.022	0.513	0.012
A:C	0.5	0.562	0.062	0.58	0.08	0.59	0.09	0.502	0.559	0.057	0.567	0.065	0.555	0.053
A:D	0.499	0.614	0.115	0.649	0.15	0.67	0.171	0.502	0.609	0.107	0.635	0.133	0.637	0.135
A:E	0.497	0.531	0.034	0.549	0.052	0.561	0.064	0.498	0.527	0.029	0.533	0.035	0.521	0.023
A:F	0.488	0.521	0.033	0.537	0.049	0.547	0.059	0.491	0.519	0.028	0.523	0.032	0.509	0.018
B:C	0.496	0.619	0.123	0.653	0.157	0.672	0.176	0.497	0.614	0.117	0.639	0.142	0.637	0.14
B:D	0.497	0.563	0.066	0.582	0.085	0.594	0.097	0.499	0.562	0.063	0.571	0.072	0.561	0.062
B:E	0.495	0.323	-0.172	0.263	-0.232	0.225	-0.27	0.497	0.321	-0.176	0.253	-0.244	0.195	-0.302
B:F	0.505	0.308	-0.197	0.252	-0.253	0.217	-0.288	0.508	0.309	-0.199	0.245	-0.263	0.189	-0.319
C:D	0.499	0.521	0.022	0.539	0.04	0.551	0.052	0.501	0.518	0.017	0.524	0.023	0.513	0.012
C:E	0.296	0.363	0.067	0.382	0.086	0.399	0.103	0.3	0.364	0.064	0.372	0.072	0.364	0.064
C:F	0.411	0.492	0.081	0.51	0.099	0.523	0.112	0.414	0.491	0.077	0.496	0.082	0.485	0.071
D:E	0.502	0.581	0.079	0.601	0.099	0.61	0.108	0.504	0.577	0.073	0.588	0.084	0.577	0.073
D:F	0.502	0.559	0.057	0.577	0.075	0.587	0.085	0.504	0.554	0.05	0.564	0.06	0.551	0.047
E:F	0.484	0.235	-0.249	0.195	-0.289	0.171	-0.313	0.487	0.239	-0.248	0.19	-0.297	0.148	-0.339

Table C.1.11 – Standard error estimates for three fixed outliers

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
B	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
C	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
D	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
E	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A:B	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A:C	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A:D	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A:E	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
A:F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
B:C	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
B:D	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
B:E	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
B:F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
C:D	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
C:E	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
C:F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
D:E	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
D:F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709
E:F	1.896	2.806	0.91	3.372	1.476	3.983	2.087	1.947	2.838	0.891	3.308	1.361	3.656	1.709

Table C.1.12 – Power estimates for three fixed outliers

	Least Squares Power							Huber Power						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.062	0.115	0.053	0.106	0.044	0.094	0.032	0.072	0.102	0.03	0.069	-0.003	0.054	-0.018
B	0.043	0.016	-0.027	0.003	-0.04	0.001	-0.042	0.068	0.037	-0.031	0.033	-0.035	0.028	-0.04
C	0.252	0.003	-0.249	0	-0.252	0	-0.252	0.24	0.041	-0.199	0.026	-0.214	0.02	-0.22
D	0.044	0.004	-0.04	0	-0.044	0	-0.044	0.057	0.019	-0.038	0.012	-0.045	0.011	-0.046
E	0.233	0.004	-0.229	0	-0.233	0	-0.233	0.246	0.027	-0.219	0.018	-0.228	0.019	-0.227
F	0.226	0.007	-0.219	0	-0.226	0	-0.226	0.246	0.033	-0.213	0.02	-0.226	0.02	-0.226
A:B	0.052	0.02	-0.032	0.005	-0.047	0.001	-0.051	0.059	0.028	-0.031	0.025	-0.034	0.027	-0.032
A:C	0.051	0.008	-0.043	0.003	-0.048	0	-0.051	0.056	0.021	-0.035	0.016	-0.04	0.018	-0.038
A:D	0.049	0.003	-0.046	0.001	-0.048	0	-0.049	0.061	0.01	-0.051	0.011	-0.05	0.013	-0.048
A:E	0.049	0.017	-0.032	0.008	-0.041	0.003	-0.046	0.062	0.035	-0.027	0.027	-0.035	0.029	-0.033
A:F	0.043	0.01	-0.033	0	-0.043	0	-0.043	0.064	0.028	-0.036	0.028	-0.036	0.032	-0.032
B:C	0.046	0.004	-0.042	0	-0.046	0	-0.046	0.06	0.011	-0.049	0.009	-0.051	0.009	-0.051
B:D	0.048	0.011	-0.037	0.002	-0.046	0.001	-0.047	0.068	0.024	-0.044	0.023	-0.045	0.019	-0.049
B:E	0.046	0.101	0.055	0.1	0.054	0.077	0.031	0.051	0.123	0.072	0.142	0.091	0.19	0.139
B:F	0.05	0.105	0.055	0.103	0.053	0.08	0.03	0.057	0.126	0.069	0.151	0.094	0.199	0.142
C:D	0.043	0.016	-0.027	0.005	-0.038	0.003	-0.04	0.054	0.038	-0.016	0.033	-0.021	0.03	-0.024
C:E	0.208	0.065	-0.143	0.033	-0.175	0.008	-0.2	0.209	0.097	-0.112	0.078	-0.131	0.069	-0.14
C:F	0.119	0.024	-0.095	0.013	-0.106	0.006	-0.113	0.134	0.054	-0.08	0.038	-0.096	0.038	-0.096
D:E	0.049	0.007	-0.042	0.004	-0.045	0.001	-0.048	0.063	0.018	-0.045	0.014	-0.049	0.012	-0.051
D:F	0.051	0.014	-0.037	0.002	-0.049	0	-0.051	0.064	0.02	-0.044	0.016	-0.048	0.016	-0.048
E:F	0.068	0.201	0.133	0.187	0.119	0.169	0.101	0.069	0.204	0.135	0.231	0.162	0.271	0.202

C.2 - Fixed outliers with negative

Table C.2.1 – Coefficient estimates for one positive and one negative fixed outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.724	153.861	0.137	153.861	0.137	153.861	0.137	153.724	153.861	0.137	153.861	0.137	153.861	0.137
A	0.078	-0.059	-0.137	-0.059	-0.137	-0.059	-0.137	0.071	0.028	-0.043	0.06	-0.011	0.083	0.012
B	-0.012	2.86	2.872	3.627	3.639	4.393	4.405	-0.007	2.572	2.579	2.995	3.002	3.286	3.293
C	-2.671	-2.534	0.137	-2.534	0.137	-2.534	0.137	-2.632	-2.624	0.008	-2.651	-0.019	-2.676	-0.044
D	-0.014	2.858	2.872	3.624	3.638	4.39	4.404	-0.037	2.585	2.622	3.006	3.043	3.298	3.335
E	-2.593	0.279	2.872	1.046	3.639	1.812	4.405	-2.589	0.006	2.595	0.431	3.02	0.72	3.309
F	2.571	-0.301	-2.872	-1.068	-3.639	-1.834	-4.405	2.568	-0.032	-2.6	-0.455	-3.023	-0.749	-3.317
A:B	-0.055	-2.928	-2.873	-3.694	-3.639	-4.46	-4.405	-0.055	-2.928	-2.873	-3.694	-3.639	-4.46	-4.405
A:C	-0.01	-0.147	-0.137	-0.147	-0.137	-0.147	-0.137	-0.01	-0.147	-0.137	-0.147	-0.137	-0.147	-0.137
A:D	0.092	-2.781	-2.873	-3.547	-3.639	-4.313	-4.405	0.092	-2.781	-2.873	-3.547	-3.639	-4.313	-4.405
A:E	0.013	-2.86	-2.873	-3.626	-3.639	-4.392	-4.405	0.013	-2.86	-2.873	-3.626	-3.639	-4.392	-4.405
A:F	0.149	3.021	2.872	3.787	3.638	4.554	4.405	0.149	3.021	2.872	3.787	3.638	4.554	4.405
B:C	-0.045	2.828	2.873	3.594	3.639	4.36	4.405	-0.045	2.828	2.873	3.594	3.639	4.36	4.405
B:D	0.005	0.142	0.137	0.142	0.137	0.142	0.137	0.005	0.142	0.137	0.142	0.137	0.142	0.137
B:E	-0.124	0.013	0.137	0.013	0.137	0.013	0.137	-0.124	0.013	0.137	0.013	0.137	0.013	0.137
B:F	0.05	-0.087	-0.137	-0.087	-0.137	-0.087	-0.137	0.05	-0.087	-0.137	-0.087	-0.137	-0.087	-0.137
C:D	0.065	2.937	2.872	3.704	3.639	4.47	4.405	0.065	2.937	2.872	3.704	3.639	4.47	4.405
C:E	-2.554	0.318	2.872	1.084	3.638	1.851	4.405	-2.554	0.318	2.872	1.084	3.638	1.851	4.405
C:F	1.5	-1.372	-2.872	-2.138	-3.638	-2.905	-4.405	1.5	-1.372	-2.872	-2.138	-3.638	-2.905	-4.405
D:E	-0.144	-0.007	0.137	-0.007	0.137	-0.007	0.137	-0.144	-0.007	0.137	-0.007	0.137	-0.007	0.137
D:F	-0.034	-0.171	-0.137	-0.171	-0.137	-0.171	-0.137	-0.034	-0.171	-0.137	-0.171	-0.137	-0.171	-0.137
E:F	-0.677	-0.814	-0.137	-0.814	-0.137	-0.814	-0.137	-0.677	-0.814	-0.137	-0.814	-0.137	-0.814	-0.137

Table C.2.2 – P-Value estimates for one positive and one negative fixed outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.595	0.108	0.634	0.147	0.669	0.182	0.472	0.579	0.107	0.605	0.133	0.624	0.152
B	0.5	0.358	-0.142	0.31	-0.19	0.271	-0.229	0.495	0.403	-0.092	0.388	-0.107	0.385	-0.11
C	0.285	0.394	0.109	0.439	0.154	0.482	0.197	0.297	0.389	0.092	0.422	0.125	0.449	0.152
D	0.499	0.365	-0.134	0.314	-0.185	0.275	-0.224	0.494	0.403	-0.091	0.389	-0.105	0.385	-0.109
E	0.297	0.608	0.311	0.609	0.312	0.573	0.276	0.305	0.587	0.282	0.599	0.294	0.598	0.293
F	0.299	0.598	0.299	0.605	0.306	0.575	0.276	0.306	0.579	0.273	0.592	0.286	0.591	0.285
A:B	0.499	0.35	-0.149	0.305	-0.194	0.268	-0.231	0.501	0.359	-0.142	0.308	-0.193	0.259	-0.242
A:C	0.5	0.606	0.106	0.644	0.144	0.679	0.179	0.502	0.611	0.109	0.642	0.14	0.666	0.164
A:D	0.499	0.37	-0.129	0.321	-0.178	0.281	-0.218	0.502	0.378	-0.124	0.322	-0.18	0.271	-0.231
A:E	0.497	0.358	-0.139	0.312	-0.185	0.273	-0.224	0.498	0.365	-0.133	0.315	-0.183	0.264	-0.234
A:F	0.488	0.341	-0.147	0.294	-0.194	0.257	-0.231	0.491	0.349	-0.142	0.297	-0.194	0.247	-0.244
B:C	0.496	0.365	-0.131	0.318	-0.178	0.278	-0.218	0.497	0.373	-0.124	0.32	-0.177	0.268	-0.229
B:D	0.497	0.6	0.103	0.639	0.142	0.674	0.177	0.499	0.604	0.105	0.636	0.137	0.66	0.161
B:E	0.495	0.596	0.101	0.635	0.14	0.671	0.176	0.497	0.601	0.104	0.633	0.136	0.657	0.16
B:F	0.505	0.609	0.104	0.647	0.142	0.682	0.177	0.508	0.613	0.105	0.645	0.137	0.668	0.16
C:D	0.499	0.348	-0.151	0.302	-0.197	0.266	-0.233	0.501	0.357	-0.144	0.306	-0.195	0.257	-0.244
C:E	0.296	0.609	0.313	0.611	0.315	0.572	0.276	0.3	0.613	0.313	0.61	0.31	0.557	0.257
C:F	0.411	0.535	0.124	0.494	0.083	0.444	0.033	0.414	0.541	0.127	0.494	0.08	0.43	0.016
D:E	0.502	0.597	0.095	0.637	0.135	0.673	0.171	0.504	0.601	0.097	0.633	0.129	0.657	0.153
D:F	0.502	0.6	0.098	0.639	0.137	0.674	0.172	0.504	0.605	0.101	0.637	0.133	0.66	0.156
E:F	0.484	0.58	0.096	0.619	0.135	0.655	0.171	0.487	0.585	0.098	0.616	0.129	0.639	0.152

Table C.2.3 – Standard error estimates for one positive and one negative fixed outliers

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
B	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
C	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
D	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
E	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A:B	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A:C	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A:D	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A:E	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
A:F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
B:C	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
B:D	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
B:E	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
B:F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
C:D	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
C:E	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
C:F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
D:E	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
D:F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298
E:F	1.896	2.566	0.67	2.925	1.029	3.317	1.421	1.947	2.658	0.711	2.976	1.029	3.245	1.298

Table C.2.4 – Power estimates for one positive and one negative fixed outliers

	Least Squares Power							Huber Power						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.062	0.008	-0.054	0.002	-0.06	0.001	-0.061	0.072	0.022	-0.05	0.015	-0.057	0.013	-0.059
B	0.043	0.099	0.056	0.095	0.052	0.089	0.046	0.068	0.096	0.028	0.081	0.013	0.073	0.005
C	0.252	0.069	-0.183	0.032	-0.22	0.008	-0.244	0.24	0.091	-0.149	0.067	-0.173	0.049	-0.191
D	0.044	0.116	0.072	0.115	0.071	0.114	0.07	0.057	0.102	0.045	0.093	0.036	0.076	0.019
E	0.233	0.006	-0.227	0.007	-0.226	0.006	-0.227	0.246	0.02	-0.226	0.019	-0.227	0.016	-0.23
F	0.226	0.013	-0.213	0.011	-0.215	0.01	-0.216	0.246	0.027	-0.219	0.026	-0.22	0.021	-0.225
A:B	0.052	0.113	0.061	0.113	0.061	0.108	0.056	0.059	0.123	0.064	0.126	0.067	0.144	0.085
A:C	0.051	0.005	-0.046	0	-0.051	0	-0.051	0.056	0.013	-0.043	0.006	-0.05	0.004	-0.052
A:D	0.049	0.103	0.054	0.105	0.056	0.098	0.049	0.061	0.099	0.038	0.118	0.057	0.14	0.079
A:E	0.049	0.096	0.047	0.091	0.042	0.084	0.035	0.062	0.091	0.029	0.114	0.052	0.146	0.084
A:F	0.043	0.11	0.067	0.112	0.069	0.108	0.065	0.064	0.11	0.046	0.126	0.062	0.155	0.091
B:C	0.046	0.094	0.048	0.092	0.046	0.086	0.04	0.06	0.097	0.037	0.111	0.051	0.148	0.088
B:D	0.048	0.006	-0.042	0.005	-0.043	0.002	-0.046	0.068	0.013	-0.055	0.006	-0.062	0.005	-0.063
B:E	0.046	0.007	-0.039	0.001	-0.045	0	-0.046	0.051	0.009	-0.042	0.006	-0.045	0.003	-0.048
B:F	0.05	0.013	-0.037	0.006	-0.044	0.002	-0.048	0.057	0.014	-0.043	0.008	-0.049	0.004	-0.053
C:D	0.043	0.109	0.066	0.111	0.068	0.108	0.065	0.054	0.117	0.063	0.131	0.077	0.156	0.102
C:E	0.208	0.01	-0.198	0.008	-0.2	0.007	-0.201	0.209	0.012	-0.197	0.013	-0.196	0.016	-0.193
C:F	0.119	0.031	-0.088	0.03	-0.089	0.031	-0.088	0.134	0.038	-0.096	0.05	-0.084	0.058	-0.076
D:E	0.049	0.003	-0.046	0	-0.049	0	-0.049	0.063	0.003	-0.06	0.003	-0.06	0.003	-0.06
D:F	0.051	0.007	-0.044	0.002	-0.049	0.001	-0.05	0.064	0.011	-0.053	0.008	-0.056	0.004	-0.06
E:F	0.068	0.019	-0.049	0.009	-0.059	0.002	-0.066	0.069	0.024	-0.045	0.014	-0.055	0.008	-0.061

Table C.2.5 – Coefficient estimates for two positive and one negative fixed outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.724	154.925	1.201	155.308	1.584	155.692	1.968	153.724	154.925	1.201	155.308	1.584	155.692	1.968
A	0.078	-1.123	-1.201	-1.507	-1.585	-1.89	-1.968	0.071	-1.207	-1.278	-1.615	-1.686	-2.024	-2.095
B	-0.012	3.925	3.937	5.074	5.086	6.223	6.235	-0.007	3.925	3.932	5.051	5.058	6.185	6.192
C	-2.671	-3.598	-0.927	-3.982	-1.311	-4.365	-1.694	-2.632	-3.771	-1.139	-4.212	-1.58	-4.637	-2.005
D	-0.014	1.794	1.808	2.177	2.191	2.56	2.574	-0.037	1.807	1.844	2.193	2.23	2.581	2.618
E	-2.593	1.344	3.937	2.493	5.086	3.642	6.235	-2.589	1.375	3.964	2.5	5.089	3.635	6.224
F	2.571	-1.366	-3.937	-2.515	-5.086	-3.664	-6.235	2.568	-1.387	-3.955	-2.513	-5.081	-3.645	-6.213
A:B	-0.055	-3.992	-3.937	-5.141	-5.086	-6.291	-6.236	-0.055	-3.992	-3.937	-5.141	-5.086	-6.291	-6.236
A:C	-0.01	0.918	0.928	1.301	1.311	1.684	1.694	-0.01	0.918	0.928	1.301	1.311	1.684	1.694
A:D	0.092	-1.717	-1.809	-2.1	-2.192	-2.483	-2.575	0.092	-1.717	-1.809	-2.1	-2.192	-2.483	-2.575
A:E	0.013	-3.924	-3.937	-5.073	-5.086	-6.223	-6.236	0.013	-3.924	-3.937	-5.073	-5.086	-6.223	-6.236
A:F	0.149	4.085	3.936	5.235	5.086	6.384	6.235	0.149	4.085	3.936	5.235	5.086	6.384	6.235
B:C	-0.045	1.763	1.808	2.146	2.191	2.53	2.575	-0.045	1.763	1.808	2.146	2.191	2.53	2.575
B:D	0.005	-0.923	-0.928	-1.306	-1.311	-1.689	-1.694	0.005	-0.923	-0.928	-1.306	-1.311	-1.689	-1.694
B:E	-0.124	1.078	1.202	1.461	1.585	1.844	1.968	-0.124	1.078	1.202	1.461	1.585	1.844	1.968
B:F	0.05	-1.151	-1.201	-1.535	-1.585	-1.918	-1.968	0.05	-1.151	-1.201	-1.535	-1.585	-1.918	-1.968
C:D	0.065	4.002	3.937	5.151	5.086	6.3	6.235	0.065	4.002	3.937	5.151	5.086	6.3	6.235
C:E	-2.554	-0.746	1.808	-0.363	2.191	0.02	2.574	-2.554	-0.746	1.808	-0.363	2.191	0.02	2.574
C:F	1.5	-0.308	-1.808	-0.691	-2.191	-1.074	-2.574	1.5	-0.308	-1.808	-0.691	-2.191	-1.074	-2.574
D:E	-0.144	-1.071	-0.927	-1.454	-1.31	-1.837	-1.693	-0.144	-1.071	-0.927	-1.454	-1.31	-1.837	-1.693
D:F	-0.034	0.894	0.928	1.277	1.311	1.66	1.694	-0.034	0.894	0.928	1.277	1.311	1.66	1.694
E:F	-0.677	-1.878	-1.201	-2.262	-1.585	-2.645	-1.968	-0.677	-1.878	-1.201	-2.262	-1.585	-2.645	-1.968

Table C.2.6 – P-Value estimates for two positive and one negative fixed outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.551	0.064	0.559	0.072	0.561	0.074	0.472	0.541	0.069	0.551	0.079	0.557	0.085
B	0.5	0.23	-0.27	0.168	-0.332	0.131	-0.369	0.495	0.25	-0.245	0.194	-0.301	0.158	-0.337
C	0.285	0.261	-0.024	0.266	-0.019	0.274	-0.011	0.297	0.264	-0.033	0.269	-0.028	0.277	-0.02
D	0.499	0.491	-0.008	0.492	-0.007	0.489	-0.01	0.494	0.49	-0.004	0.5	0.006	0.504	0.01
E	0.297	0.542	0.245	0.449	0.152	0.35	0.053	0.305	0.535	0.23	0.464	0.159	0.38	0.075
F	0.299	0.545	0.246	0.447	0.148	0.346	0.047	0.306	0.537	0.231	0.464	0.158	0.377	0.071
A:B	0.499	0.229	-0.27	0.168	-0.331	0.131	-0.368	0.501	0.242	-0.259	0.186	-0.315	0.151	-0.35
A:C	0.5	0.574	0.074	0.586	0.086	0.59	0.09	0.502	0.583	0.081	0.6	0.098	0.608	0.106
A:D	0.499	0.493	-0.006	0.495	-0.004	0.493	-0.006	0.502	0.504	0.002	0.51	0.008	0.513	0.011
A:E	0.497	0.233	-0.264	0.171	-0.326	0.133	-0.364	0.498	0.247	-0.251	0.189	-0.309	0.154	-0.344
A:F	0.488	0.217	-0.271	0.158	-0.33	0.123	-0.365	0.491	0.229	-0.262	0.177	-0.314	0.144	-0.347
B:C	0.496	0.483	-0.013	0.485	-0.011	0.485	-0.011	0.497	0.493	-0.004	0.501	0.004	0.505	0.008
B:D	0.497	0.574	0.077	0.585	0.088	0.586	0.089	0.499	0.582	0.083	0.598	0.099	0.603	0.104
B:E	0.495	0.563	0.068	0.571	0.076	0.572	0.077	0.497	0.572	0.075	0.584	0.087	0.59	0.093
B:F	0.505	0.557	0.052	0.562	0.057	0.561	0.056	0.508	0.567	0.059	0.576	0.068	0.579	0.071
C:D	0.499	0.224	-0.275	0.167	-0.332	0.13	-0.369	0.501	0.238	-0.263	0.185	-0.316	0.151	-0.35
C:E	0.296	0.577	0.281	0.641	0.345	0.687	0.391	0.3	0.586	0.286	0.652	0.352	0.7	0.4
C:F	0.411	0.593	0.182	0.622	0.211	0.639	0.228	0.414	0.6	0.186	0.635	0.221	0.655	0.241
D:E	0.502	0.558	0.056	0.569	0.067	0.571	0.069	0.504	0.567	0.063	0.583	0.079	0.59	0.086
D:F	0.502	0.575	0.073	0.587	0.085	0.592	0.09	0.504	0.584	0.08	0.601	0.097	0.609	0.105
E:F	0.484	0.474	-0.01	0.473	-0.011	0.471	-0.013	0.487	0.485	-0.002	0.489	0.002	0.491	0.004

Table C.2.7 – Standard error estimates two one positive and one negative fixed outliers

	Least Squares Standard Error							Huber Standard Error						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
B	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
C	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
D	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
E	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A:B	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A:C	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A:D	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A:E	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
A:F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
B:C	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
B:D	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
B:E	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
B:F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
C:D	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
C:E	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
C:F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
D:E	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
D:F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629
E:F	1.896	2.533	0.637	2.912	1.016	3.328	1.432	1.947	2.657	0.71	3.101	1.154	3.576	1.629

Table C.2.8 – Power estimates for two positive and one negative fixed outliers

	Least Squares Power							Huber Power						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.062	0.023	-0.039	0.014	-0.048	0.008	-0.054	0.072	0.042	-0.03	0.029	-0.043	0.013	-0.059
B	0.043	0.228	0.185	0.273	0.23	0.298	0.255	0.068	0.221	0.153	0.247	0.179	0.252	0.184
C	0.252	0.159	-0.093	0.119	-0.133	0.084	-0.168	0.24	0.189	-0.051	0.14	-0.1	0.092	-0.148
D	0.044	0.048	0.004	0.03	-0.014	0.015	-0.029	0.057	0.056	-0.001	0.044	-0.013	0.032	-0.025
E	0.233	0.03	-0.203	0.037	-0.196	0.054	-0.179	0.246	0.043	-0.203	0.051	-0.195	0.056	-0.19
F	0.226	0.023	-0.203	0.037	-0.189	0.05	-0.176	0.246	0.038	-0.208	0.045	-0.201	0.056	-0.19
A:B	0.052	0.232	0.18	0.272	0.22	0.301	0.249	0.059	0.22	0.161	0.247	0.188	0.263	0.204
A:C	0.051	0.015	-0.036	0.009	-0.042	0.003	-0.048	0.056	0.021	-0.035	0.01	-0.046	0.005	-0.051
A:D	0.049	0.037	-0.012	0.023	-0.026	0.014	-0.035	0.061	0.047	-0.014	0.03	-0.031	0.019	-0.042
A:E	0.049	0.216	0.167	0.258	0.209	0.302	0.253	0.062	0.21	0.148	0.223	0.161	0.246	0.184
A:F	0.043	0.253	0.21	0.287	0.244	0.318	0.275	0.064	0.243	0.179	0.272	0.208	0.279	0.215
B:C	0.046	0.039	-0.007	0.021	-0.025	0.01	-0.036	0.06	0.038	-0.022	0.023	-0.037	0.01	-0.05
B:D	0.048	0.013	-0.035	0.013	-0.035	0.008	-0.04	0.068	0.017	-0.051	0.013	-0.055	0.009	-0.059
B:E	0.046	0.016	-0.03	0.009	-0.037	0.005	-0.041	0.051	0.023	-0.028	0.009	-0.042	0.007	-0.044
B:F	0.05	0.017	-0.033	0.01	-0.04	0.007	-0.043	0.057	0.028	-0.029	0.016	-0.041	0.008	-0.049
C:D	0.043	0.235	0.192	0.289	0.246	0.316	0.273	0.054	0.229	0.175	0.251	0.197	0.269	0.215
C:E	0.208	0.012	-0.196	0.004	-0.204	0	-0.208	0.209	0.015	-0.194	0.003	-0.206	0.001	-0.208
C:F	0.119	0.013	-0.106	0.008	-0.111	0.002	-0.117	0.134	0.024	-0.11	0.011	-0.123	0.001	-0.133
D:E	0.049	0.01	-0.039	0.004	-0.045	0.002	-0.047	0.063	0.018	-0.045	0.008	-0.055	0.004	-0.059
D:F	0.051	0.015	-0.036	0.009	-0.042	0.005	-0.046	0.064	0.021	-0.043	0.013	-0.051	0.006	-0.058
E:F	0.068	0.039	-0.029	0.027	-0.041	0.018	-0.05	0.069	0.042	-0.027	0.03	-0.039	0.017	-0.052

C.3 - Random outlier

Table C.3.1 – Coefficient estimates for one random outlier

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.793	153.819	0.026	153.831	0.038	153.842	0.049	153.793	153.819	0.026	153.831	0.038	153.842	0.049
A	-0.027	-0.069	-0.042	-0.082	-0.055	-0.096	-0.069	-0.036	-0.06	-0.024	-0.054	-0.018	-0.052	-0.016
B	-0.032	-0.034	-0.002	-0.036	-0.004	-0.038	-0.006	-0.031	-0.053	-0.022	-0.052	-0.021	-0.051	-0.02
C	-2.653	-2.569	0.084	-2.569	0.084	-2.569	0.084	-2.634	-2.586	0.048	-2.591	0.043	-2.593	0.041
D	0.004	0.02	0.016	0.021	0.017	0.022	0.018	-0.026	-0.009	0.017	-0.011	0.015	-0.011	0.015
E	-2.63	-2.508	0.122	-2.494	0.136	-2.48	0.15	-2.639	-2.578	0.061	-2.588	0.051	-2.596	0.043
F	2.674	2.607	-0.067	2.612	-0.062	2.618	-0.056	2.688	2.664	-0.024	2.683	-0.005	2.688	0
A:B	-0.124	-0.144	-0.02	-0.155	-0.031	-0.165	-0.041	-0.124	-0.144	-0.02	-0.155	-0.031	-0.165	-0.041
A:C	0.029	0.053	0.024	0.059	0.03	0.065	0.036	0.029	0.053	0.024	0.059	0.03	0.065	0.036
A:D	-0.028	-0.122	-0.094	-0.16	-0.132	-0.197	-0.169	-0.028	-0.122	-0.094	-0.16	-0.132	-0.197	-0.169
A:E	0.047	0.043	-0.004	0.04	-0.007	0.037	-0.01	0.047	0.043	-0.004	0.04	-0.007	0.037	-0.01
A:F	0.099	0.117	0.018	0.125	0.026	0.133	0.034	0.099	0.117	0.018	0.125	0.026	0.133	0.034
B:C	0.007	0.03	0.023	0.035	0.028	0.04	0.033	0.007	0.03	0.023	0.035	0.028	0.04	0.033
B:D	0.115	0.111	-0.004	0.109	-0.006	0.107	-0.008	0.115	0.111	-0.004	0.109	-0.006	0.107	-0.008
B:E	0.047	0.099	0.052	0.121	0.074	0.144	0.097	0.047	0.099	0.052	0.121	0.074	0.144	0.097
B:F	-0.104	-0.056	0.048	-0.034	0.07	-0.011	0.093	-0.104	-0.056	0.048	-0.034	0.07	-0.011	0.093
C:D	-0.091	-0.098	-0.007	-0.102	-0.011	-0.105	-0.014	-0.091	-0.098	-0.007	-0.102	-0.011	-0.105	-0.014
C:E	-2.558	-2.478	0.08	-2.476	0.082	-2.475	0.083	-2.558	-2.478	0.08	-2.476	0.082	-2.475	0.083
C:F	1.367	1.364	-0.003	1.381	0.014	1.397	0.03	1.367	1.364	-0.003	1.381	0.014	1.397	0.03
D:E	-0.131	-0.155	-0.024	-0.169	-0.038	-0.183	-0.052	-0.131	-0.155	-0.024	-0.169	-0.038	-0.183	-0.052
D:F	0.049	0.027	-0.022	0.02	-0.029	0.013	-0.036	0.049	0.027	-0.022	0.02	-0.029	0.013	-0.036
E:F	-0.698	-0.698	0	-0.708	-0.01	-0.718	-0.02	-0.698	-0.698	0	-0.708	-0.01	-0.718	-0.02

Table C.3.2 – P-Value estimates for one random outlier

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.497	0.01	0.493	0.006	0.486	-0.001	0.477	0.486	0.009	0.488	0.011	0.49	0.013
B	0.505	0.5	-0.005	0.493	-0.012	0.484	-0.021	0.485	0.486	0.001	0.488	0.003	0.489	0.004
C	0.294	0.347	0.053	0.374	0.08	0.399	0.105	0.303	0.341	0.038	0.35	0.047	0.353	0.05
D	0.511	0.512	0.001	0.503	-0.008	0.489	-0.022	0.497	0.497	0	0.498	0.001	0.499	0.002
E	0.294	0.354	0.06	0.382	0.088	0.407	0.113	0.299	0.344	0.045	0.353	0.054	0.357	0.058
F	0.29	0.344	0.054	0.371	0.081	0.397	0.107	0.292	0.331	0.039	0.338	0.046	0.342	0.05
A:B	0.501	0.499	-0.002	0.496	-0.005	0.489	-0.012	0.503	0.491	-0.012	0.473	-0.03	0.442	-0.061
A:C	0.502	0.517	0.015	0.513	0.011	0.504	0.002	0.503	0.511	0.008	0.49	-0.013	0.457	-0.046
A:D	0.5	0.501	0.001	0.496	-0.004	0.487	-0.013	0.5	0.494	-0.006	0.473	-0.027	0.44	-0.06
A:E	0.508	0.504	-0.004	0.495	-0.013	0.484	-0.024	0.51	0.497	-0.013	0.47	-0.04	0.433	-0.077
A:F	0.492	0.501	0.009	0.495	0.003	0.487	-0.005	0.493	0.494	0.001	0.472	-0.021	0.44	-0.053
B:C	0.495	0.495	0	0.491	-0.004	0.482	-0.013	0.497	0.489	-0.008	0.468	-0.029	0.434	-0.063
B:D	0.505	0.514	0.009	0.504	-0.001	0.49	-0.015	0.507	0.507	0	0.481	-0.026	0.442	-0.065
B:E	0.499	0.504	0.005	0.497	-0.002	0.486	-0.013	0.5	0.498	-0.002	0.477	-0.023	0.442	-0.058
B:F	0.509	0.505	-0.004	0.497	-0.012	0.488	-0.021	0.51	0.498	-0.012	0.474	-0.036	0.441	-0.069
C:D	0.495	0.497	0.002	0.496	0.001	0.491	-0.004	0.497	0.49	-0.007	0.473	-0.024	0.443	-0.054
C:E	0.31	0.366	0.056	0.391	0.081	0.413	0.103	0.313	0.36	0.047	0.369	0.056	0.37	0.057
C:F	0.432	0.456	0.024	0.464	0.032	0.466	0.034	0.435	0.449	0.014	0.439	0.004	0.417	-0.018
D:E	0.509	0.506	-0.003	0.503	-0.006	0.496	-0.013	0.51	0.498	-0.012	0.481	-0.029	0.45	-0.06
D:F	0.521	0.52	-0.001	0.512	-0.009	0.499	-0.022	0.521	0.513	-0.008	0.488	-0.033	0.45	-0.071
E:F	0.476	0.485	0.009	0.486	0.01	0.482	0.006	0.476	0.478	0.002	0.466	-0.01	0.438	-0.038

Table C.3.3 – Standard error estimates for one random outlier

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
B	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
C	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
D	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
E	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A:B	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A:C	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A:D	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A:E	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
A:F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
B:C	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
B:D	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
B:E	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
B:F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
C:D	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
C:E	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
C:F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
D:E	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
D:F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392
E:F	1.916	2.218	0.302	2.44	0.524	2.698	0.782	1.962	2.202	0.24	2.298	0.336	2.354	0.392

Table C.3.4 – Power estimates for one random outlier

	Least Squares Power							Huber Power						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	1	0	1	0	1	0	1	1	0	1	0	1	0
A	0.06	0.058	-0.002	0.058	-0.002	0.053	-0.007	0.071	0.066	-0.005	0.063	-0.008	0.061	-0.01
B	0.04	0.04	0	0.036	-0.004	0.031	-0.009	0.072	0.067	-0.005	0.064	-0.008	0.061	-0.011
C	0.246	0.183	-0.063	0.163	-0.083	0.144	-0.102	0.258	0.206	-0.052	0.198	-0.06	0.195	-0.063
D	0.039	0.05	0.011	0.044	0.005	0.039	0	0.063	0.063	0	0.059	-0.004	0.056	-0.007
E	0.234	0.162	-0.072	0.149	-0.085	0.125	-0.109	0.226	0.198	-0.028	0.185	-0.041	0.174	-0.052
F	0.234	0.178	-0.056	0.157	-0.077	0.137	-0.097	0.241	0.21	-0.031	0.198	-0.043	0.191	-0.05
A:B	0.045	0.045	0	0.043	-0.002	0.036	-0.009	0.058	0.063	0.005	0.074	0.016	0.08	0.022
A:C	0.044	0.037	-0.007	0.034	-0.01	0.032	-0.012	0.049	0.054	0.005	0.063	0.014	0.072	0.023
A:D	0.05	0.049	-0.001	0.044	-0.006	0.037	-0.013	0.056	0.059	0.003	0.074	0.018	0.085	0.029
A:E	0.046	0.046	0	0.041	-0.005	0.034	-0.012	0.064	0.071	0.007	0.063	-0.001	0.076	0.012
A:F	0.043	0.038	-0.005	0.034	-0.009	0.03	-0.013	0.064	0.049	-0.015	0.067	0.003	0.085	0.021
B:C	0.05	0.061	0.011	0.052	0.002	0.041	-0.009	0.056	0.069	0.013	0.076	0.02	0.099	0.043
B:D	0.04	0.042	0.002	0.04	0	0.033	-0.007	0.054	0.054	0	0.064	0.01	0.078	0.024
B:E	0.042	0.046	0.004	0.045	0.003	0.045	0.003	0.055	0.07	0.015	0.076	0.021	0.092	0.037
B:F	0.044	0.048	0.004	0.042	-0.002	0.031	-0.013	0.054	0.062	0.008	0.073	0.019	0.076	0.022
C:D	0.05	0.044	-0.006	0.041	-0.009	0.034	-0.016	0.061	0.065	0.004	0.066	0.005	0.075	0.014
C:E	0.222	0.166	-0.056	0.143	-0.079	0.131	-0.091	0.22	0.179	-0.041	0.188	-0.032	0.204	-0.016
C:F	0.103	0.084	-0.019	0.082	-0.021	0.076	-0.027	0.114	0.113	-0.001	0.108	-0.006	0.124	0.01
D:E	0.048	0.048	0	0.042	-0.006	0.038	-0.01	0.062	0.054	-0.008	0.06	-0.002	0.081	0.019
D:F	0.039	0.036	-0.003	0.035	-0.004	0.029	-0.01	0.051	0.059	0.008	0.065	0.014	0.076	0.025
E:F	0.066	0.06	-0.006	0.051	-0.015	0.046	-0.02	0.073	0.069	-0.004	0.078	0.005	0.103	0.03

Table C.3.5 – Coefficient estimates for two random outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.793	153.779	-0.014	153.773	-0.02	153.767	-0.026	153.793	153.779	-0.014	153.773	-0.02	153.767	-0.026
A	-0.027	-0.076	-0.049	-0.086	-0.059	-0.095	-0.068	-0.036	-0.068	-0.032	-0.081	-0.045	-0.094	-0.058
B	-0.032	-0.008	0.024	0.004	0.036	0.016	0.048	-0.031	-0.033	-0.002	-0.039	-0.008	-0.027	0.004
C	-2.653	-2.487	0.166	-2.487	0.166	-2.486	0.167	-2.634	-2.544	0.09	-2.556	0.078	-2.574	0.06
D	0.004	-0.033	-0.037	-0.05	-0.054	-0.068	-0.072	-0.026	-0.03	-0.004	-0.042	-0.016	-0.051	-0.025
E	-2.63	-2.439	0.191	-2.426	0.204	-2.414	0.216	-2.639	-2.548	0.091	-2.568	0.071	-2.589	0.05
F	2.674	2.521	-0.153	2.525	-0.149	2.528	-0.146	2.688	2.609	-0.079	2.638	-0.05	2.657	-0.031
A:B	-0.124	-0.142	-0.018	-0.158	-0.034	-0.175	-0.051	-0.124	-0.142	-0.018	-0.158	-0.034	-0.175	-0.051
A:C	0.029	0.031	0.002	0.029	0	0.028	-0.001	0.029	0.031	0.002	0.029	0	0.028	-0.001
A:D	-0.028	-0.113	-0.085	-0.152	-0.124	-0.191	-0.163	-0.028	-0.113	-0.085	-0.152	-0.124	-0.191	-0.163
A:E	0.047	0.064	0.017	0.073	0.026	0.082	0.035	0.047	0.064	0.017	0.073	0.026	0.082	0.035
A:F	0.099	0.139	0.04	0.149	0.05	0.16	0.061	0.099	0.139	0.04	0.149	0.05	0.16	0.061
B:C	0.007	-0.013	-0.02	-0.021	-0.028	-0.029	-0.036	0.007	-0.013	-0.02	-0.021	-0.028	-0.029	-0.036
B:D	0.115	0.088	-0.027	0.076	-0.039	0.065	-0.05	0.115	0.088	-0.027	0.076	-0.039	0.065	-0.05
B:E	0.047	0.101	0.054	0.122	0.075	0.144	0.097	0.047	0.101	0.054	0.122	0.075	0.144	0.097
B:F	-0.104	-0.038	0.066	-0.01	0.094	0.019	0.123	-0.104	-0.038	0.066	-0.01	0.094	0.019	0.123
C:D	-0.091	-0.136	-0.045	-0.15	-0.059	-0.163	-0.072	-0.091	-0.136	-0.045	-0.15	-0.059	-0.163	-0.072
C:E	-2.558	-2.406	0.152	-2.413	0.145	-2.419	0.139	-2.558	-2.406	0.152	-2.413	0.145	-2.419	0.139
C:F	1.367	1.361	-0.006	1.396	0.029	1.43	0.063	1.367	1.361	-0.006	1.396	0.029	1.43	0.063
D:E	-0.131	-0.168	-0.037	-0.186	-0.055	-0.205	-0.074	-0.131	-0.168	-0.037	-0.186	-0.055	-0.205	-0.074
D:F	0.049	0.025	-0.024	0.011	-0.038	-0.003	-0.052	0.049	0.025	-0.024	0.011	-0.038	-0.003	-0.052
E:F	-0.698	-0.718	-0.02	-0.747	-0.049	-0.776	-0.078	-0.698	-0.718	-0.02	-0.747	-0.049	-0.776	-0.078

Table C.3.6 – P-Value estimates for two random outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.488	0.001	0.486	-0.001	0.483	-0.004	0.477	0.483	0.006	0.483	0.006	0.485	0.008
B	0.505	0.497	-0.008	0.494	-0.011	0.495	-0.01	0.485	0.491	0.006	0.493	0.008	0.497	0.012
C	0.294	0.383	0.089	0.413	0.119	0.435	0.141	0.303	0.369	0.066	0.386	0.083	0.396	0.093
D	0.511	0.501	-0.01	0.495	-0.016	0.493	-0.018	0.497	0.496	-0.001	0.493	-0.004	0.497	0
E	0.294	0.382	0.088	0.406	0.112	0.422	0.128	0.299	0.368	0.069	0.382	0.083	0.392	0.093
F	0.29	0.38	0.09	0.408	0.118	0.425	0.135	0.292	0.363	0.071	0.378	0.086	0.39	0.098
A:B	0.501	0.49	-0.011	0.486	-0.015	0.484	-0.017	0.503	0.481	-0.022	0.461	-0.042	0.439	-0.064
A:C	0.502	0.513	0.011	0.506	0.004	0.502	0	0.503	0.504	0.001	0.479	-0.024	0.454	-0.049
A:D	0.5	0.506	0.006	0.498	-0.002	0.492	-0.008	0.5	0.499	-0.001	0.475	-0.025	0.449	-0.051
A:E	0.508	0.51	0.002	0.51	0.002	0.509	0.001	0.51	0.502	-0.008	0.484	-0.026	0.464	-0.046
A:F	0.492	0.497	0.005	0.497	0.005	0.495	0.003	0.493	0.489	-0.004	0.472	-0.021	0.448	-0.045
B:C	0.495	0.491	-0.004	0.483	-0.012	0.481	-0.014	0.497	0.482	-0.015	0.46	-0.037	0.437	-0.06
B:D	0.505	0.506	0.001	0.504	-0.001	0.504	-0.001	0.507	0.498	-0.009	0.481	-0.026	0.461	-0.046
B:E	0.499	0.497	-0.002	0.492	-0.007	0.488	-0.011	0.5	0.491	-0.009	0.469	-0.031	0.443	-0.057
B:F	0.509	0.497	-0.012	0.49	-0.019	0.485	-0.024	0.51	0.489	-0.021	0.465	-0.045	0.439	-0.071
C:D	0.495	0.491	-0.004	0.493	-0.002	0.498	0.003	0.497	0.484	-0.013	0.469	-0.028	0.453	-0.044
C:E	0.31	0.399	0.089	0.419	0.109	0.432	0.122	0.313	0.392	0.079	0.396	0.083	0.389	0.076
C:F	0.432	0.46	0.028	0.468	0.036	0.474	0.042	0.435	0.454	0.019	0.444	0.009	0.43	-0.005
D:E	0.509	0.51	0.001	0.504	-0.005	0.5	-0.009	0.51	0.504	-0.006	0.481	-0.029	0.456	-0.054
D:F	0.521	0.511	-0.01	0.505	-0.016	0.5	-0.021	0.521	0.504	-0.017	0.481	-0.04	0.455	-0.066
E:F	0.476	0.48	0.004	0.477	0.001	0.477	0.001	0.476	0.472	-0.004	0.452	-0.024	0.431	-0.045

Table C.3.7 – Standard error estimates for two random outliers

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
B	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
C	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
D	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
E	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A:B	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A:C	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A:D	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A:E	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
A:F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
B:C	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
B:D	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
B:E	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
B:F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
C:D	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
C:E	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
C:F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
D:E	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
D:F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913
E:F	1.916	2.471	0.555	2.851	0.935	3.275	1.359	1.962	2.454	0.492	2.678	0.716	2.875	0.913

Table C.3.8 – Power estimates for two random outliers

	Least Squares Power						Huber Power					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	0.959	-0.041	0.959	-0.041	0.959	-0.041	1	0.959	-0.041	0.959	-0.041	0.96	-0.04
A	0.06	0.155	0.095	0.153	0.093	0.15	0.09	0.071	0.163	0.092	0.16	0.089	0.156	0.085
B	0.04	0.149	0.109	0.146	0.106	0.144	0.104	0.072	0.155	0.083	0.153	0.081	0.149	0.077
C	0.246	0.186	-0.06	0.174	-0.072	0.166	-0.08	0.258	0.201	-0.057	0.193	-0.065	0.186	-0.072
D	0.039	0.154	0.115	0.151	0.112	0.149	0.11	0.063	0.16	0.097	0.157	0.094	0.153	0.09
E	0.234	0.184	-0.05	0.174	-0.06	0.166	-0.068	0.226	0.196	-0.03	0.188	-0.038	0.182	-0.044
F	0.234	0.196	-0.038	0.182	-0.052	0.172	-0.062	0.241	0.212	-0.029	0.201	-0.04	0.194	-0.047
A:B	0.045	0.15	0.105	0.149	0.104	0.148	0.103	0.058	0.158	0.1	0.161	0.103	0.169	0.111
A:C	0.044	0.146	0.102	0.145	0.101	0.144	0.1	0.049	0.152	0.103	0.156	0.107	0.163	0.114
A:D	0.05	0.154	0.104	0.152	0.102	0.15	0.1	0.056	0.16	0.104	0.165	0.109	0.171	0.115
A:E	0.046	0.147	0.101	0.145	0.099	0.143	0.097	0.064	0.154	0.09	0.157	0.093	0.163	0.099
A:F	0.043	0.151	0.108	0.148	0.105	0.146	0.103	0.064	0.156	0.092	0.16	0.096	0.165	0.101
B:C	0.05	0.155	0.105	0.153	0.103	0.151	0.101	0.056	0.163	0.107	0.167	0.111	0.174	0.118
B:D	0.04	0.15	0.11	0.147	0.107	0.145	0.105	0.054	0.159	0.105	0.161	0.107	0.167	0.113
B:E	0.042	0.149	0.107	0.147	0.105	0.146	0.104	0.055	0.157	0.102	0.16	0.105	0.167	0.112
B:F	0.044	0.15	0.106	0.148	0.104	0.147	0.103	0.054	0.158	0.104	0.162	0.108	0.169	0.115
C:D	0.05	0.152	0.102	0.149	0.099	0.146	0.096	0.061	0.157	0.096	0.159	0.098	0.163	0.102
C:E	0.222	0.183	-0.039	0.173	-0.049	0.166	-0.056	0.22	0.19	-0.03	0.188	-0.032	0.19	-0.03
C:F	0.103	0.165	0.062	0.159	0.056	0.154	0.051	0.114	0.174	0.06	0.173	0.059	0.177	0.063
D:E	0.048	0.15	0.102	0.147	0.099	0.146	0.098	0.062	0.156	0.094	0.16	0.098	0.167	0.105
D:F	0.039	0.145	0.106	0.144	0.105	0.144	0.105	0.051	0.153	0.102	0.157	0.106	0.164	0.113
E:F	0.066	0.154	0.088	0.151	0.085	0.149	0.083	0.073	0.16	0.087	0.165	0.092	0.17	0.097

Table C.3.9 – Coefficient estimates for three random outliers

	Least Squares Coefficients							Huber Coefficients						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	153.793	153.817	0.024	153.817	0.024	153.818	0.025	153.793	153.817	0.024	153.817	0.024	153.818	0.025
A	-0.027	-0.05	-0.023	-0.056	-0.029	-0.062	-0.035	-0.036	-0.079	-0.043	-0.098	-0.062	-0.111	-0.075
B	-0.032	-0.022	0.01	-0.012	0.02	-0.002	0.03	-0.031	-0.061	-0.03	-0.063	-0.032	-0.071	-0.04
C	-2.653	-2.359	0.294	-2.343	0.31	-2.327	0.326	-2.634	-2.455	0.179	-2.471	0.163	-2.489	0.145
D	0.004	0.027	0.023	0.033	0.029	0.039	0.035	-0.026	0.052	0.078	0.061	0.087	0.077	0.103
E	-2.63	-2.331	0.299	-2.305	0.325	-2.28	0.35	-2.639	-2.47	0.169	-2.471	0.168	-2.467	0.172
F	2.674	2.457	-0.217	2.465	-0.209	2.474	-0.2	2.688	2.535	-0.153	2.574	-0.114	2.59	-0.098
A:B	-0.124	-0.155	-0.031	-0.168	-0.044	-0.18	-0.056	-0.124	-0.155	-0.031	-0.168	-0.044	-0.18	-0.056
A:C	0.029	0.043	0.014	0.047	0.018	0.051	0.022	0.029	0.043	0.014	0.047	0.018	0.051	0.022
A:D	-0.028	-0.121	-0.093	-0.161	-0.133	-0.202	-0.174	-0.028	-0.121	-0.093	-0.161	-0.133	-0.202	-0.174
A:E	0.047	0.045	-0.002	0.046	-0.001	0.047	0	0.047	0.045	-0.002	0.046	-0.001	0.047	0
A:F	0.099	0.151	0.052	0.165	0.066	0.18	0.081	0.099	0.151	0.052	0.165	0.066	0.18	0.081
B:C	0.007	-0.033	-0.04	-0.051	-0.058	-0.07	-0.077	0.007	-0.033	-0.04	-0.051	-0.058	-0.07	-0.077
B:D	0.115	0.059	-0.056	0.036	-0.079	0.013	-0.102	0.115	0.059	-0.056	0.036	-0.079	0.013	-0.102
B:E	0.047	0.114	0.067	0.142	0.095	0.17	0.123	0.047	0.114	0.067	0.142	0.095	0.17	0.123
B:F	-0.104	-0.04	0.064	-0.006	0.098	0.029	0.133	-0.104	-0.04	0.064	-0.006	0.098	0.029	0.133
C:D	-0.091	-0.164	-0.073	-0.197	-0.106	-0.231	-0.14	-0.091	-0.164	-0.073	-0.197	-0.106	-0.231	-0.14
C:E	-2.558	-2.352	0.206	-2.371	0.187	-2.39	0.168	-2.558	-2.352	0.206	-2.371	0.187	-2.39	0.168
C:F	1.367	1.32	-0.047	1.351	-0.016	1.383	0.016	1.367	1.32	-0.047	1.351	-0.016	1.383	0.016
D:E	-0.131	-0.191	-0.06	-0.222	-0.091	-0.254	-0.123	-0.131	-0.191	-0.06	-0.222	-0.091	-0.254	-0.123
D:F	0.049	0.043	-0.006	0.036	-0.013	0.029	-0.02	0.049	0.043	-0.006	0.036	-0.013	0.029	-0.02
E:F	-0.698	-0.664	0.034	-0.681	0.017	-0.697	0.001	-0.698	-0.664	0.034	-0.681	0.017	-0.697	0.001

Table C.3.10 – P-Value estimates for three random outliers

	Least Squares P-Value							Huber P-Value						
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0.487	0.492	0.005	0.492	0.005	0.492	0.005	0.477	0.481	0.004	0.482	0.005	0.484	0.007
B	0.505	0.51	0.005	0.508	0.003	0.505	0	0.485	0.497	0.012	0.499	0.014	0.504	0.019
C	0.294	0.415	0.121	0.447	0.153	0.468	0.174	0.303	0.397	0.094	0.421	0.118	0.436	0.133
D	0.511	0.505	-0.006	0.503	-0.008	0.499	-0.012	0.497	0.495	-0.002	0.499	0.002	0.5	0.003
E	0.294	0.402	0.108	0.427	0.133	0.44	0.146	0.299	0.39	0.091	0.41	0.111	0.419	0.12
F	0.29	0.4	0.11	0.427	0.137	0.447	0.157	0.292	0.386	0.094	0.41	0.118	0.425	0.133
A:B	0.501	0.487	-0.014	0.484	-0.017	0.481	-0.02	0.503	0.482	-0.021	0.469	-0.034	0.452	-0.051
A:C	0.502	0.503	0.001	0.499	-0.003	0.496	-0.006	0.503	0.497	-0.006	0.482	-0.021	0.466	-0.037
A:D	0.5	0.509	0.009	0.502	0.002	0.497	-0.003	0.5	0.502	0.002	0.486	-0.014	0.467	-0.033
A:E	0.508	0.504	-0.004	0.5	-0.008	0.498	-0.01	0.51	0.499	-0.011	0.486	-0.024	0.469	-0.041
A:F	0.492	0.503	0.011	0.5	0.008	0.498	0.006	0.493	0.495	0.002	0.483	-0.01	0.467	-0.026
B:C	0.495	0.482	-0.013	0.477	-0.018	0.474	-0.021	0.497	0.475	-0.022	0.459	-0.038	0.441	-0.056
B:D	0.505	0.498	-0.007	0.494	-0.011	0.49	-0.015	0.507	0.492	-0.015	0.479	-0.028	0.462	-0.045
B:E	0.499	0.497	-0.002	0.495	-0.004	0.493	-0.006	0.5	0.493	-0.007	0.481	-0.019	0.465	-0.035
B:F	0.509	0.499	-0.01	0.495	-0.014	0.493	-0.016	0.51	0.494	-0.016	0.482	-0.028	0.466	-0.044
C:D	0.495	0.493	-0.002	0.494	-0.001	0.492	-0.003	0.497	0.488	-0.009	0.478	-0.019	0.461	-0.036
C:E	0.31	0.415	0.105	0.433	0.123	0.447	0.137	0.313	0.41	0.097	0.418	0.105	0.419	0.106
C:F	0.432	0.473	0.041	0.481	0.049	0.485	0.053	0.435	0.467	0.032	0.466	0.031	0.457	0.022
D:E	0.509	0.5	-0.009	0.495	-0.014	0.492	-0.017	0.51	0.493	-0.017	0.48	-0.03	0.461	-0.049
D:F	0.521	0.492	-0.029	0.488	-0.033	0.486	-0.035	0.521	0.486	-0.035	0.473	-0.048	0.457	-0.064
E:F	0.476	0.48	0.004	0.479	0.003	0.476	0	0.476	0.476	0	0.465	-0.011	0.447	-0.029

Table C.3.11 – Standard error estimates for three random outliers

	Least Squares Standard Error						Huber Standard Error					
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
B	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
C	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
D	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
E	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A:B	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A:C	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A:D	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A:E	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
A:F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
B:C	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
B:D	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
B:E	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
B:F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
C:D	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
C:E	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
C:F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
D:E	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
D:F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504
E:F	1.916	2.695	0.779	3.202	1.286	3.754	1.838	1.962	2.687	0.725	3.094	1.132	3.466	1.504

Table C.3.12 – Power estimates for three random outliers

| | Least Squares Power | | | | | | Huber Power | | | | | |
	No outlier	3 SD	Difference	4 SD	Difference	5 SD	No outlier	3 SD	Difference	4 SD	Difference	5 SD	Difference
(Intercept)	1	0.959	-0.041	0.959	-0.041	0.959	-0.041	1	0.959	-0.041	0.96	-0.04	0.961	-0.039
A	0.06	0.154	0.094	0.151	0.091	0.149	0.089	0.071	0.165	0.094	0.161	0.09	0.156	0.085
B	0.04	0.148	0.108	0.145	0.105	0.144	0.104	0.072	0.155	0.083	0.153	0.081	0.148	0.076
C	0.246	0.178	-0.068	0.167	-0.079	0.16	-0.086	0.258	0.193	-0.065	0.183	-0.075	0.175	-0.083
D	0.039	0.152	0.113	0.15	0.111	0.147	0.108	0.063	0.159	0.096	0.156	0.093	0.15	0.087
E	0.234	0.174	-0.06	0.166	-0.068	0.16	-0.074	0.226	0.187	-0.039	0.18	-0.046	0.173	-0.053
F	0.234	0.186	-0.048	0.173	-0.061	0.165	-0.069	0.241	0.198	-0.043	0.186	-0.055	0.177	-0.064
A:B	0.045	0.149	0.104	0.148	0.103	0.147	0.102	0.058	0.156	0.098	0.158	0.1	0.163	0.105
A:C	0.044	0.146	0.102	0.145	0.101	0.145	0.101	0.049	0.152	0.103	0.155	0.106	0.16	0.111
A:D	0.05	0.152	0.102	0.149	0.099	0.148	0.098	0.056	0.158	0.102	0.161	0.105	0.164	0.108
A:E	0.046	0.148	0.102	0.146	0.1	0.145	0.099	0.064	0.155	0.091	0.158	0.094	0.162	0.098
A:F	0.043	0.15	0.107	0.147	0.104	0.146	0.103	0.064	0.155	0.091	0.158	0.094	0.162	0.098
B:C	0.05	0.156	0.106	0.153	0.103	0.151	0.101	0.056	0.162	0.106	0.164	0.108	0.168	0.112
B:D	0.04	0.15	0.11	0.147	0.107	0.145	0.105	0.054	0.158	0.104	0.159	0.105	0.164	0.11
B:E	0.042	0.149	0.107	0.147	0.105	0.146	0.104	0.055	0.156	0.101	0.157	0.102	0.162	0.107
B:F	0.044	0.151	0.107	0.15	0.106	0.149	0.105	0.054	0.157	0.103	0.16	0.106	0.163	0.109
C:D	0.05	0.153	0.103	0.15	0.1	0.148	0.098	0.061	0.158	0.097	0.16	0.099	0.162	0.101
C:E	0.222	0.177	-0.045	0.168	-0.054	0.161	-0.061	0.22	0.182	-0.038	0.178	-0.042	0.179	-0.041
C:F	0.103	0.164	0.061	0.158	0.055	0.154	0.051	0.114	0.17	0.056	0.169	0.055	0.171	0.057
D:E	0.048	0.151	0.103	0.149	0.101	0.148	0.1	0.062	0.157	0.095	0.16	0.098	0.164	0.102
D:F	0.039	0.147	0.108	0.146	0.107	0.146	0.107	0.051	0.155	0.104	0.158	0.107	0.163	0.112
E:F	0.066	0.154	0.088	0.151	0.085	0.15	0.084	0.073	0.159	0.086	0.161	0.088	0.166	0.093

Appendix D - T-Distribution tables

Table D.1.1 – T-distribution three degrees of freedom

T-Dist: 3 DF	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.749	153.749	0	0.282	0.257	-0.025	0	0	0	1	1	0	0.083	0.949	0.866	0.044	0.679	0.635
A	0.005	-0.001	-0.006	0.282	0.257	-0.025	0.496	0.497	0.001	0.039	0.058	0.019	0.083	0.949	0.866	0.044	0.679	0.635
B	-0.008	-0.002	0.006	0.282	0.257	-0.025	0.474	0.475	0.001	0.054	0.07	0.016	0.083	0.949	0.866	0.044	0.679	0.635
C	0.618	0.615	-0.003	0.282	0.257	-0.025	0.131	0.11	-0.021	0.524	0.562	0.038	0.083	0.949	0.866	0.044	0.679	0.635
D	-0.019	-0.014	0.005	0.282	0.257	-0.025	0.499	0.516	0.017	0.042	0.063	0.021	0.083	0.949	0.866	0.044	0.679	0.635
E	-0.499	-0.503	-0.004	0.282	0.257	-0.025	0.205	0.179	-0.026	0.398	0.442	0.044	0.083	0.949	0.866	0.044	0.679	0.635
F	-0.002	-0.005	-0.003	0.282	0.257	-0.025	0.492	0.485	-0.007	0.048	0.059	0.011	0.083	0.949	0.866	0.044	0.679	0.635
A:B	0.011	0.011	0	0.282	0.257	-0.025	0.506	0.482	-0.024	0.05	0.083	0.033	0.083	0.949	0.866	0.044	0.679	0.635
A:C	-0.002	-0.002	0	0.282	0.257	-0.025	0.494	0.468	-0.026	0.043	0.08	0.037	0.083	0.949	0.866	0.044	0.679	0.635
A:D	-0.01	-0.01	0	0.282	0.257	-0.025	0.488	0.464	-0.024	0.038	0.086	0.048	0.083	0.949	0.866	0.044	0.679	0.635
A:E	-0.006	-0.006	0	0.282	0.257	-0.025	0.473	0.449	-0.024	0.049	0.101	0.052	0.083	0.949	0.866	0.044	0.679	0.635
A:F	-0.006	-0.006	0	0.282	0.257	-0.025	0.474	0.446	-0.028	0.047	0.083	0.036	0.083	0.949	0.866	0.044	0.679	0.635
B:C	0.01	0.01	0	0.282	0.257	-0.025	0.486	0.461	-0.025	0.036	0.084	0.048	0.083	0.949	0.866	0.044	0.679	0.635
B:D	0	0	0	0.282	0.257	-0.025	0.484	0.459	-0.025	0.05	0.086	0.036	0.083	0.949	0.866	0.044	0.679	0.635
B:E	-0.01	-0.01	0	0.282	0.257	-0.025	0.493	0.468	-0.025	0.044	0.082	0.038	0.083	0.949	0.866	0.044	0.679	0.635
B:F	-0.016	-0.016	0	0.282	0.257	-0.025	0.488	0.462	-0.026	0.039	0.088	0.049	0.083	0.949	0.866	0.044	0.679	0.635
C:D	-0.003	-0.003	0	0.282	0.257	-0.025	0.475	0.449	-0.026	0.041	0.076	0.035	0.083	0.949	0.866	0.044	0.679	0.635
C:E	0.506	0.506	0	0.282	0.257	-0.025	0.195	0.18	-0.015	0.397	0.437	0.04	0.083	0.949	0.866	0.044	0.679	0.635
C:F	0.005	0.005	0	0.282	0.257	-0.025	0.492	0.467	-0.025	0.044	0.085	0.041	0.083	0.949	0.866	0.044	0.679	0.635
D:E	-0.019	-0.019	0	0.282	0.257	-0.025	0.496	0.472	-0.024	0.048	0.081	0.033	0.083	0.949	0.866	0.044	0.679	0.635
D:F	0.014	0.014	0	0.282	0.257	-0.025	0.491	0.462	-0.029	0.038	0.086	0.048	0.083	0.949	0.866	0.044	0.679	0.635
E:F	-0.008	-0.008	0	0.282	0.257	-0.025	0.496	0.47	-0.026	0.049	0.087	0.038	0.083	0.949	0.866	0.044	0.679	0.635

Table D.1.2 – T-distribution with five degrees of freedom

	T-Dist: 5 DF																	
	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.748	153.748	0	0.221	0.218	-0.003	0	0	0	1	1	0	0.086	0.553	0.467	0.05	0.557	0.507
A	-0.001	-0.002	-0.001	0.221	0.218	-0.003	0.519	0.504	-0.015	0.044	0.068	0.024	0.086	0.553	0.467	0.05	0.557	0.507
B	0.003	0.005	0.002	0.221	0.218	-0.003	0.504	0.495	-0.009	0.041	0.066	0.025	0.086	0.553	0.467	0.05	0.557	0.507
C	0.615	0.612	-0.003	0.221	0.218	-0.003	0.067	0.069	0.002	0.707	0.693	-0.014	0.086	0.553	0.467	0.05	0.557	0.507
D	0.003	0.005	0.002	0.221	0.218	-0.003	0.505	0.502	-0.003	0.046	0.059	0.013	0.086	0.553	0.467	0.05	0.557	0.507
E	-0.507	-0.508	-0.001	0.221	0.218	-0.003	0.126	0.121	-0.005	0.543	0.542	-0.001	0.086	0.553	0.467	0.05	0.557	0.507
F	0.001	-0.002	-0.003	0.221	0.218	-0.003	0.502	0.498	-0.004	0.031	0.05	0.019	0.086	0.553	0.467	0.05	0.557	0.507
A:B	-0.008	-0.008	0	0.221	0.218	-0.003	0.488	0.478	-0.01	0.058	0.075	0.017	0.086	0.553	0.467	0.05	0.557	0.507
A:C	-0.011	-0.011	0	0.221	0.218	-0.003	0.5	0.49	-0.01	0.038	0.062	0.024	0.086	0.553	0.467	0.05	0.557	0.507
A:D	-0.005	-0.005	0	0.221	0.218	-0.003	0.511	0.501	-0.01	0.044	0.048	0.004	0.086	0.553	0.467	0.05	0.557	0.507
A:E	-0.002	-0.002	0	0.221	0.218	-0.003	0.489	0.48	-0.009	0.034	0.049	0.015	0.086	0.553	0.467	0.05	0.557	0.507
A:F	0	0	0	0.221	0.218	-0.003	0.506	0.497	-0.009	0.036	0.059	0.023	0.086	0.553	0.467	0.05	0.557	0.507
B:C	-0.004	-0.004	0	0.221	0.218	-0.003	0.497	0.487	-0.01	0.044	0.067	0.023	0.086	0.553	0.467	0.05	0.557	0.507
B:D	0.006	0.006	0	0.221	0.218	-0.003	0.494	0.485	-0.009	0.043	0.058	0.015	0.086	0.553	0.467	0.05	0.557	0.507
B:E	0.006	0.006	0	0.221	0.218	-0.003	0.517	0.508	-0.009	0.039	0.056	0.017	0.086	0.553	0.467	0.05	0.557	0.507
B:F	0.011	0.011	0	0.221	0.218	-0.003	0.505	0.496	-0.009	0.038	0.053	0.015	0.086	0.553	0.467	0.05	0.557	0.507
C:D	0.003	0.003	0	0.221	0.218	-0.003	0.498	0.489	-0.009	0.035	0.063	0.028	0.086	0.553	0.467	0.05	0.557	0.507
C:E	0.507	0.507	0	0.221	0.218	-0.003	0.125	0.124	-0.001	0.538	0.536	-0.002	0.086	0.553	0.467	0.05	0.557	0.507
C:F	0.01	0.01	0	0.221	0.218	-0.003	0.513	0.505	-0.008	0.044	0.063	0.019	0.086	0.553	0.467	0.05	0.557	0.507
D:E	0.002	0.002	0	0.221	0.218	-0.003	0.506	0.497	-0.009	0.042	0.063	0.021	0.086	0.553	0.467	0.05	0.557	0.507
D:F	0	0	0	0.221	0.218	-0.003	0.494	0.484	-0.01	0.045	0.066	0.021	0.086	0.553	0.467	0.05	0.557	0.507
E:F	0.003	0.003	0	0.221	0.218	-0.003	0.51	0.499	-0.011	0.038	0.053	0.015	0.086	0.553	0.467	0.05	0.557	0.507

Table D.1.3– T-distribution with ten degrees of freedom

T-Dist: 10 DF

	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.742	153.742	0	0.194	0.195	0.001	0	0	0	1	1	0	0.068	0.387	0.319	0.06	0.493	0.433
A	-0.003	-0.002	0.001	0.194	0.195	0.001	0.499	0.491	-0.008	0.042	0.058	0.016	0.068	0.387	0.319	0.06	0.493	0.433
B	-0.01	-0.011	-0.001	0.194	0.195	0.001	0.509	0.496	-0.013	0.044	0.055	0.011	0.068	0.387	0.319	0.06	0.493	0.433
C	0.622	0.625	0.003	0.194	0.195	0.001	0.038	0.041	0.003	0.798	0.784	-0.014	0.068	0.387	0.319	0.06	0.493	0.433
D	0	-0.001	-0.001	0.194	0.195	0.001	0.506	0.489	-0.017	0.045	0.059	0.014	0.068	0.387	0.319	0.06	0.493	0.433
E	-0.504	-0.507	-0.003	0.194	0.195	0.001	0.087	0.09	0.003	0.631	0.603	-0.028	0.068	0.387	0.319	0.06	0.493	0.433
F	-0.002	-0.001	0.001	0.194	0.195	0.001	0.515	0.5	-0.015	0.036	0.056	0.02	0.068	0.387	0.319	0.06	0.493	0.433
A:B	0.017	0.017	0	0.194	0.195	0.001	0.507	0.504	-0.003	0.045	0.06	0.015	0.068	0.387	0.319	0.06	0.493	0.433
A:C	-0.004	-0.004	0	0.194	0.195	0.001	0.493	0.49	-0.003	0.053	0.07	0.017	0.068	0.387	0.319	0.06	0.493	0.433
A:D	-0.002	-0.002	0	0.194	0.195	0.001	0.505	0.502	-0.003	0.052	0.054	0.002	0.068	0.387	0.319	0.06	0.493	0.433
A:E	-0.005	-0.005	0	0.194	0.195	0.001	0.505	0.503	-0.002	0.055	0.064	0.009	0.068	0.387	0.319	0.06	0.493	0.433
A:F	-0.005	-0.005	0	0.194	0.195	0.001	0.496	0.494	-0.002	0.056	0.066	0.01	0.068	0.387	0.319	0.06	0.493	0.433
B:C	-0.004	-0.004	0	0.194	0.195	0.001	0.492	0.491	-0.001	0.052	0.075	0.023	0.068	0.387	0.319	0.06	0.493	0.433
B:D	0.006	0.006	0	0.194	0.195	0.001	0.505	0.504	-0.001	0.048	0.068	0.02	0.068	0.387	0.319	0.06	0.493	0.433
B:E	-0.009	-0.009	0	0.194	0.195	0.001	0.508	0.504	-0.004	0.043	0.053	0.01	0.068	0.387	0.319	0.06	0.493	0.433
B:F	-0.005	-0.005	0	0.194	0.195	0.001	0.502	0.499	-0.003	0.054	0.066	0.012	0.068	0.387	0.319	0.06	0.493	0.433
C:D	0.005	0.005	0	0.194	0.195	0.001	0.505	0.501	-0.004	0.048	0.061	0.013	0.068	0.387	0.319	0.06	0.493	0.433
C:E	0.508	0.508	0	0.194	0.195	0.001	0.084	0.087	0.003	0.651	0.619	-0.032	0.068	0.387	0.319	0.06	0.493	0.433
C:F	-0.004	-0.004	0	0.194	0.195	0.001	0.504	0.501	-0.003	0.044	0.057	0.013	0.068	0.387	0.319	0.06	0.493	0.433
D:E	-0.006	-0.006	0	0.194	0.195	0.001	0.493	0.489	-0.004	0.059	0.06	0.001	0.068	0.387	0.319	0.06	0.493	0.433
D:F	0.013	0.013	0	0.194	0.195	0.001	0.513	0.51	-0.003	0.04	0.056	0.016	0.068	0.387	0.319	0.06	0.493	0.433
E:F	-0.001	-0.001	0	0.194	0.195	0.001	0.511	0.508	-0.003	0.041	0.056	0.015	0.068	0.387	0.319	0.06	0.493	0.433

Table D.1.4– T-distribution with fifteen degrees of freedom

T-Dist: 15 DF	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.748	153.748	0	0.186	0.191	0.005	0	0	0	1	1	0	0.083	0.355	0.272	0.042	0.409	0.367
A	0.002	0.003	0.001	0.186	0.191	0.005	0.501	0.492	-0.009	0.05	0.073	0.023	0.083	0.355	0.272	0.042	0.409	0.367
B	0.013	0.011	-0.002	0.186	0.191	0.005	0.483	0.48	-0.003	0.06	0.082	0.022	0.083	0.355	0.272	0.042	0.409	0.367
C	0.626	0.625	-0.001	0.186	0.191	0.005	0.031	0.036	0.005	0.845	0.798	-0.047	0.083	0.355	0.272	0.042	0.409	0.367
D	0.002	0.004	0.002	0.186	0.191	0.005	0.495	0.485	-0.01	0.061	0.081	0.02	0.083	0.355	0.272	0.042	0.409	0.367
E	-0.505	-0.506	-0.001	0.186	0.191	0.005	0.077	0.084	0.007	0.668	0.646	-0.022	0.083	0.355	0.272	0.042	0.409	0.367
F	0.003	0.004	0.001	0.186	0.191	0.005	0.504	0.496	-0.008	0.04	0.064	0.024	0.083	0.355	0.272	0.042	0.409	0.367
A:B	0.002	0.002	0	0.186	0.191	0.005	0.491	0.493	0.002	0.046	0.055	0.009	0.083	0.355	0.272	0.042	0.409	0.367
A:C	0.001	0.001	0	0.186	0.191	0.005	0.51	0.512	0.002	0.053	0.067	0.014	0.083	0.355	0.272	0.042	0.409	0.367
A:D	-0.002	-0.002	0	0.186	0.191	0.005	0.497	0.499	0.002	0.038	0.044	0.006	0.083	0.355	0.272	0.042	0.409	0.367
A:E	0	0	0	0.186	0.191	0.005	0.507	0.508	0.001	0.041	0.055	0.014	0.083	0.355	0.272	0.042	0.409	0.367
A:F	0.005	0.005	0	0.186	0.191	0.005	0.501	0.501	0	0.063	0.072	0.009	0.083	0.355	0.272	0.042	0.409	0.367
B:C	0.007	0.007	0	0.186	0.191	0.005	0.504	0.506	0.002	0.053	0.064	0.011	0.083	0.355	0.272	0.042	0.409	0.367
B:D	-0.009	-0.009	0	0.186	0.191	0.005	0.506	0.508	0.002	0.041	0.052	0.011	0.083	0.355	0.272	0.042	0.409	0.367
B:E	0.009	0.009	0	0.186	0.191	0.005	0.503	0.504	0.001	0.056	0.068	0.012	0.083	0.355	0.272	0.042	0.409	0.367
B:F	-0.004	-0.004	0	0.186	0.191	0.005	0.515	0.518	0.003	0.05	0.064	0.014	0.083	0.355	0.272	0.042	0.409	0.367
C:D	-0.009	-0.009	0	0.186	0.191	0.005	0.513	0.514	0.001	0.042	0.05	0.008	0.083	0.355	0.272	0.042	0.409	0.367
C:E	0.502	0.502	0	0.186	0.191	0.005	0.078	0.085	0.007	0.665	0.637	-0.028	0.083	0.355	0.272	0.042	0.409	0.367
C:F	0	0	0	0.186	0.191	0.005	0.508	0.509	0.001	0.051	0.056	0.005	0.083	0.355	0.272	0.042	0.409	0.367
D:E	-0.002	-0.002	0	0.186	0.191	0.005	0.506	0.507	0.001	0.054	0.063	0.009	0.083	0.355	0.272	0.042	0.409	0.367
D:F	0.004	0.004	0	0.186	0.191	0.005	0.503	0.506	0.003	0.052	0.066	0.014	0.083	0.355	0.272	0.042	0.409	0.367
E:F	-0.001	-0.001	0	0.186	0.191	0.005	0.509	0.511	0.002	0.041	0.053	0.012	0.083	0.355	0.272	0.042	0.409	0.367

Table D.1.5 – T-distribution with twenty-five degrees of freedom

T-Dist: 25 DF	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.754	153.754	0	0.182	0.188	0.006	0	0	0	1	1	0	0.072	0.318	0.246	0.033	0.429	0.396
A	-0.006	-0.005	0.001	0.182	0.188	0.006	0.506	0.506	0	0.054	0.074	0.02	0.072	0.318	0.246	0.033	0.429	0.396
B	-0.004	-0.004	0	0.182	0.188	0.006	0.499	0.501	0.002	0.051	0.061	0.01	0.072	0.318	0.246	0.033	0.429	0.396
C	0.613	0.612	-0.001	0.182	0.188	0.006	0.028	0.035	0.007	0.843	0.813	-0.03	0.072	0.318	0.246	0.033	0.429	0.396
D	0.004	0.004	0	0.182	0.188	0.006	0.502	0.507	0.005	0.058	0.067	0.009	0.072	0.318	0.246	0.033	0.429	0.396
E	-0.503	-0.505	-0.002	0.182	0.188	0.006	0.069	0.078	0.009	0.681	0.638	-0.043	0.072	0.318	0.246	0.033	0.429	0.396
F	0.007	0.007	0	0.182	0.188	0.006	0.497	0.496	-0.001	0.047	0.073	0.026	0.072	0.318	0.246	0.033	0.429	0.396
A:B	0	0	0	0.182	0.188	0.006	0.501	0.504	0.003	0.051	0.056	0.005	0.072	0.318	0.246	0.033	0.429	0.396
A:C	0.004	0.004	0	0.182	0.188	0.006	0.52	0.523	0.003	0.045	0.045	0	0.072	0.318	0.246	0.033	0.429	0.396
A:D	-0.001	-0.001	0	0.182	0.188	0.006	0.51	0.512	0.002	0.043	0.044	0.001	0.072	0.318	0.246	0.033	0.429	0.396
A:E	-0.001	-0.001	0	0.182	0.188	0.006	0.499	0.503	0.004	0.052	0.056	0.004	0.072	0.318	0.246	0.033	0.429	0.396
A:F	-0.002	-0.002	0	0.182	0.188	0.006	0.511	0.515	0.004	0.043	0.048	0.005	0.072	0.318	0.246	0.033	0.429	0.396
B:C	-0.004	-0.004	0	0.182	0.188	0.006	0.476	0.478	0.002	0.052	0.058	0.006	0.072	0.318	0.246	0.033	0.429	0.396
B:D	0.001	0.001	0	0.182	0.188	0.006	0.506	0.51	0.004	0.05	0.054	0.004	0.072	0.318	0.246	0.033	0.429	0.396
B:E	-0.005	-0.005	0	0.182	0.188	0.006	0.506	0.51	0.004	0.04	0.045	0.005	0.072	0.318	0.246	0.033	0.429	0.396
B:F	0.003	0.003	0	0.182	0.188	0.006	0.512	0.515	0.003	0.052	0.057	0.005	0.072	0.318	0.246	0.033	0.429	0.396
C:D	0.001	0.001	0	0.182	0.188	0.006	0.5	0.502	0.002	0.052	0.059	0.007	0.072	0.318	0.246	0.033	0.429	0.396
C:E	0.497	0.497	0	0.182	0.188	0.006	0.071	0.077	0.006	0.674	0.63	-0.044	0.072	0.318	0.246	0.033	0.429	0.396
C:F	-0.003	-0.003	0	0.182	0.188	0.006	0.505	0.509	0.004	0.051	0.063	0.012	0.072	0.318	0.246	0.033	0.429	0.396
D:E	-0.006	-0.006	0	0.182	0.188	0.006	0.505	0.508	0.003	0.053	0.06	0.007	0.072	0.318	0.246	0.033	0.429	0.396
D:F	0.011	0.011	0	0.182	0.188	0.006	0.509	0.514	0.005	0.043	0.049	0.006	0.072	0.318	0.246	0.033	0.429	0.396
E:F	0.008	0.008	0	0.182	0.188	0.006	0.502	0.505	0.003	0.046	0.053	0.007	0.072	0.318	0.246	0.033	0.429	0.396

Table D.1.6 – T-distribution with forty degrees of freedom

T-Dist: 40 DF	Coefficients			Standard Error			P-Values			Power			Range of SE					
	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS	Huber	Difference	LS Min	LS Max	Difference	Huber Min	Huber Max	Difference
(Intercept)	153.754	153.754	0	0.178	0.18	0.002	0	0	0	1	1	0	0.067	0.322	0.255	0.01	0.453	0.443
A	-0.016	-0.015	0.001	0.178	0.18	0.002	0.492	0.489	-0.003	0.04	0.078	0.038	0.067	0.322	0.255	0.01	0.453	0.443
B	-0.004	-0.004	0	0.178	0.18	0.002	0.501	0.479	-0.022	0.051	0.072	0.021	0.067	0.322	0.255	0.01	0.453	0.443
C	0.623	0.626	0.003	0.178	0.18	0.002	0.023	0.028	0.005	0.88	0.834	-0.046	0.067	0.322	0.255	0.01	0.453	0.443
D	-0.005	-0.009	-0.004	0.178	0.18	0.002	0.512	0.498	-0.014	0.051	0.085	0.034	0.067	0.322	0.255	0.01	0.453	0.443
E	-0.511	-0.512	-0.001	0.178	0.18	0.002	0.062	0.071	0.009	0.716	0.694	-0.022	0.067	0.322	0.255	0.01	0.453	0.443
F	0.004	0.005	0.001	0.178	0.18	0.002	0.504	0.491	-0.013	0.048	0.074	0.026	0.067	0.322	0.255	0.01	0.453	0.443
A:B	-0.004	-0.004	0	0.178	0.18	0.002	0.497	0.493	-0.004	0.052	0.069	0.017	0.067	0.322	0.255	0.01	0.453	0.443
A:C	0.012	0.012	0	0.178	0.18	0.002	0.502	0.498	-0.004	0.058	0.074	0.016	0.067	0.322	0.255	0.01	0.453	0.443
A:D	0.003	0.003	0	0.178	0.18	0.002	0.512	0.507	-0.005	0.052	0.062	0.01	0.067	0.322	0.255	0.01	0.453	0.443
A:E	-0.013	-0.013	0	0.178	0.18	0.002	0.494	0.49	-0.004	0.048	0.065	0.017	0.067	0.322	0.255	0.01	0.453	0.443
A:F	0.006	0.006	0	0.178	0.18	0.002	0.49	0.486	-0.004	0.039	0.064	0.025	0.067	0.322	0.255	0.01	0.453	0.443
B:C	0	0	0	0.178	0.18	0.002	0.504	0.501	-0.003	0.047	0.068	0.021	0.067	0.322	0.255	0.01	0.453	0.443
B:D	0.003	0.003	0	0.178	0.18	0.002	0.492	0.487	-0.005	0.053	0.059	0.006	0.067	0.322	0.255	0.01	0.453	0.443
B:E	0.003	0.003	0	0.178	0.18	0.002	0.51	0.506	-0.004	0.033	0.055	0.022	0.067	0.322	0.255	0.01	0.453	0.443
B:F	-0.003	-0.003	0	0.178	0.18	0.002	0.517	0.513	-0.004	0.042	0.057	0.015	0.067	0.322	0.255	0.01	0.453	0.443
C:D	-0.01	-0.01	0	0.178	0.18	0.002	0.512	0.51	-0.002	0.049	0.073	0.024	0.067	0.322	0.255	0.01	0.453	0.443
C:E	0.505	0.505	0	0.178	0.18	0.002	0.06	0.065	0.005	0.699	0.679	-0.02	0.067	0.322	0.255	0.01	0.453	0.443
C:F	0.004	0.004	0	0.178	0.18	0.002	0.507	0.504	-0.003	0.044	0.057	0.013	0.067	0.322	0.255	0.01	0.453	0.443
D:E	-0.003	-0.003	0	0.178	0.18	0.002	0.501	0.496	-0.005	0.045	0.069	0.024	0.067	0.322	0.255	0.01	0.453	0.443
D:F	0.006	0.006	0	0.178	0.18	0.002	0.505	0.502	-0.003	0.051	0.077	0.026	0.067	0.322	0.255	0.01	0.453	0.443
E:F	0.003	0.003	0	0.178	0.18	0.002	0.506	0.501	-0.005	0.05	0.064	0.014	0.067	0.322	0.255	0.01	0.453	0.443