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ABSTRACT

This study focused on the role of PhotoModeler, a close-range photogrammetry software package, in an important facet of traffic accident reconstruction—vehicle crush measurement. More specifically, this study applied the PhotoModeler process to controlled crash information generated by the National Highway Traffic Safety Administration (NHTSA). A statistical technique known as bootstrapping was utilized to generate distributions from which the variability was examined. The "within" subject analysis showed that 44.8% of the variability is due to the technique itself and the "between" subjects analysis demonstrated that 55.2% of the variability is attributable to vehicle type—roughly half and half. Additionally, a 95% CI for the "within" analysis revealed that the mean difference (between this study and NHTSA) fell between -2.52 mph and +2.73 mph; the "between" analysis showed a mean difference between -3.26 mph and +2.41 mph.

INTRODUCTION

In the accident reconstruction community, it has been known for thirty years or more that vehicle crush can be used to determine the equivalent barrier speed (EBS). Emori [1] and Campbell [2] each showed that the relationship between crush and speed is linear in nature. Additionally, Campbell [2] related vehicle crush and the vehicle's stiffness characteristics to the amount of energy absorbed; this energy can be subsequently used to compute the EBS. Campbell's work is the foundation for the equations and software used by accident reconstructionists to determine crush energy and, consequently, the EBS.

In order to get the energy from crush, the crush must first be measured. There are a variety of techniques available: tape measures, measuring poles, grids, and photogrammetry. The major problem with the first three techniques is that one is measuring against a "phantom" pre-impact boundary. The post-impact vehicle position/shape is located easily enough, but not the pre-impact vehicle boundary position/shape. With these two techniques, locating the front of the vehicle prior to frontal impact could be described as an educated guess at best. But with photogrammetry, the locations of the pre- and post-impact components are both known. The technique is one where 3-D models are created of both the crushed and the exemplar vehicles. The models of the two vehicles are "superimposed" on top of one another. Crush measurements can then be established from the pre- and post-impact points of the 3-D model. An energy calculation can then be made using vehicle stiffness data and the pre-impact speed can be determined via a correlation.

The main objective of this study was to show that PhotoModeler is a suitable measurement tool for vehicle crush measurement. This was accomplished by applying PhotoModeler plus crush equations to NHTSA controlled crash data. The consistency of the studies' results with the nominal 35 mph is the indicator of acceptability of the technique.

Two statistical analyses were performed: (1) the "within" subject design and (2) the "between" subject design. The first involved measuring the same vehicle twenty different times. This gave us a good idea of the repeatability of the experiment. The second involved measuring various types of vehicle categories (such as

SUV's, Pickup Trucks, Luxury Cars, Mid-Size Cars) to examine the variability between vehicle classes.

The NHTSA photographs needed for this study's analysis are problematical to use for this work because of their poor quality and limited quantity. Therefore, this effort could not support a large sample size needed for most statistical analysis. As will be discussed later, a "bootstrapping" technique allowed statistical analyses to determine variance. In effect, there were two experiments (the "within" and the "between") and they each had their own associated bootstrapping analysis to determine each variance.

SELECTION OF SAMPLES

As mentioned previously, photographs from NHTSA reports were used. The specific sample that was used in the "within" subjects design was of a 1998 Ford Contour (NHTSA test # 2708). The specific samples that were used in the "between" subjects design are delineated in Table 1 below. Note that these samples were selected as having sufficient quality photographs.

Case	Category	Vehicle	NHTSA Test #
1	Large Luxury Cars	2002 Cadillac De Ville	4238
2	Midsize Luxury Cars	2003 Mercedes E320	4483
3	Large Family Cars	2001 Buick LeSabre	3520
4	Midsize Mod. Priced	2003 Toyota Avalon	4486
5	Midsize Mod. Priced	2002 Audi A4	3566
6	Midsize Inexpensive	2003 Hyundai Accent	4473
7	Midsize Inexpensive	2001 Chevy Malibu	3666
8	Convertibles	2003 Honda S2000	4462
9	Small Cars	2002 Mini Cooper	4273
10	Small Cars	2003 Toyota Corolla	4266
11	Utility Vehicles	2002 Chrysler PT Cruiser	4230
12	Mid Utility Vehicles	2002 Ford Explorer Sport	4223
13	Mid Utility Vehicles	2002 Nissan Pathfinder	4263
14	Sm Utility Vehicles	2002 Toyota Highlander	4265
15	Sm Utility Vehicles	2003 Subaru Forester	4479
16	Large Pickups	2002 Dodge Ram 1500	4240
17	Large Pickups	2001 Nissan Frontier	3574
18	Large Pickups	2003 Chevy Silverado	4472
19	Passenger Vans	2001 Dodge Wagon Van	3639
20	Passenger Vans	2001 Dodge Caravan	3659

Table 1: Overview of vehicles used in the "between" subjects design.

PHOTOMODELER PROCEDURE

Description of the Software

PhotoModeler is a photogrammetry software package presented by EOS Systems in Vancouver, British Columbia. The specific version of PhotoModeler used in this study was version 4.0g. PhotoModeler can be used for a multitude of different measuring applications, including plant engineering, forensics, anthropology, and of course, traffic accident reconstruction. Interested readers can visit http://www.photomodeler.com for purchasing and additional information. PhotoModeler is capable of handling 2-D AR projects like accident scene measurement, and 3-D projects such as vehicle crush measurement.

Description of a Generic PhotoModeler Procedure

The first step of a new PhotoModeler project involves taking pictures of the object or scene of interest. A new project is then created using the software's Project Setup Wizard; this is where the user enters fundamental information such as location of the digitized photos, approximate size of the object, and camera information. After that, the user marks features with a mouse on each photograph using the various tools available. Next the project is processed and PhotoModeler creates a 3-D model from the 2-D photographs. The user then gives the project dimension by scaling it. At this point, the user can extract the desired measurements from the marked features.

Camera Calibration

For use in this study, a digital Olympus C-5050 was calibrated using the embedded Camera Calibrator program in PhotoModeler. Camera calibration ensures an accurate measuring device. This particular camera was chosen because of its (relatively high) resolution (5.0 Mega pixels), its use of ordinary AA batteries (which are easily rechargeable) and its ability to hold two (2) digital storage cards (a Smart Media and a Compact Flash). The process involved taking eight (8) pictures of a special grid which was projected onto a wall. This is illustrated with Figure 1, which is a screenshot (a depiction of what one might see on the computer screen) of the procedure. After points were marked and processed with the Camera Calibrator software, camera information such as focal length, format size, and principal point was determined as a result. Figure 2 shows the C-5050's resultant camera information.

Exemplar Modeling

The first step in the crush measurement project was to determine the year, make, and model of the subject or crushed vehicle and then locate an exemplar of that particular vehicle model at a local dealership. Several pictures from a variety of angles were then taken of the exemplar with the calibrated camera. In order for PhotoModeler to create an accurate 3-D model, every point must reside in at least two (2) photographs, preferably three (3.) The user's picture taking technique needs to reflect this requirement, hence; the pictures must overlap. Figure 3 helps to demonstrate this point. For instance, a single point like Point # 8 (which is a point on the front badge of the vehicle) must reside in three (3) different photographs (Photo 1, Photo 2, Photo 3). The camera positions were typically at the four sides and at the four corners of the vehicle, which allowed for good overlap. For scaling purposes, at least one physical measurement must be made on the exemplar. This particular measurement can be between any two distinct points on the vehicle. Normally, the length along the bottom edge of a (front) door or the wheelbase was selected for the sake of simplicity. The photos themselves were downloaded from the camera to the computer via USB cable and stored in a folder marked "Exemplar Malibu" (or whatever the vehicle model may be) on the computer's desktop for easy retrieval.

Using PhotoModeler's "Project Setup Wizard", two or three photos at a time were opened up and distinct points on the vehicle were marked and referenced on all photos. "Marking a point" entailed selecting the point tool which looks like a single "x" on the toolbar. The user would then mark a distinct point on the first photograph, such as point # 8 which is the edge of one of the stars on the Subaru badge. "Referencing a point" required the use of the referencing tool on the toolbar which resembles a double "x." Referencing "notifies" PhotoModeler of Point # 8's location on the other photos (Photos # 2 and # 3), i.e., this allows PhotoModeler to recognize that this is the same physical point in space. This procedure of marking and referencing continued until the entire exemplar was modeled. After processing and scaling, the exemplar model was exported into a .dxf format for the control point file. This step was completed in PhotoModeler, under the File menu.

Crushed Vehicle Modeling

The first task in this portion of the study was to obtain pictures of the crushed vehicles. The user could download the pictures, print them out, and digitize them via flatbed scanner, or, download and save the pictures directly. This was the procedure utilized in this study, with the exception of the vehicle examined in the "within" subjects design (a 1998 Ford Contour). In this instance, the authors had the NHTSA report already in their possession and the photos were digitized with the scanner. The NHTSA website to visit to obtain the crash test photos ishttp://www-nrd.nhtsa.dot.gov/database/nrd-11/veh_db.html. The digitized photos were then opened into the exemplar project (saved under another name) and the .dxf control point file was opened. Control points were marked on undamaged portions of the crushed vehicle and referenced across the exemplar. After processing, points on the damaged portion of the crushed vehicle were marked and referenced. The project was processed one final time. Reference lines were established and measurements were extracted. Figure 3, a screenshot of the 2003 Subaru Forester utilized in the study, shows exemplar and crushed photos, as well as a 3-D viewer. The 3-D viewer reveals the 3-D model created in the study; the exemplar is shown

EBS DETERMINATION

This study utilized equations put forth in Traffic Accident Reconstruction by Cooper [3]. The equations themselves are the CRASH3 model equations which are based on Campbell's work; this is how this study determined EBS (Equivalent Barrier Speed) and is the authors' preferred method.

In using this relationship, vehicle weight, width of crush, and crush coefficients are required input and must be known prior to the calculation of EBS. The first two can be determined easily; the last can be approximated or purchased.

$$A = \frac{w\, b_0 b_1}{g\, L}$$

$$B = \frac{w\, b_1^2}{g\, L}$$

$$b_1 = \frac{(v_i - b_0)}{c_{ave}}$$

where

$w = Weight\ of\ test\ vehicle\ (lbs.)$

$b_0 = Maximum\ impact\ speed\ without\ damage\ (mph.)$

$b_1 = Slope\ (rate\ at\ which\ permanent\ deformation\ occurs)(mph\ /\ in.)$

$g = gravitational\ cons\tan t\ (in\ /\ \sec^2.)$

$L = width\ of\ crushed\ region\ test\ vehicle\ (in)$

$c_{ave} = average\ crush\ depth\ of\ test\ vehicle$

Crush Coefficient Determination

This study made use of the CRASH3 equations for crush coefficients. They are:

Figure 4 shows a typical spreadsheet used in crush coefficient determination. This particular example is of a 2003 Mercedes E320. The needed crash test data was taken directly from the NHTSA website which was given previously. Note that the crash test data is in metric units; this is specified on the right portion of the page. These dimensions were subsequently converted to English units, which are shown on the left portion of the page. Crush coefficients A and B were easily computed with the above formulas, information from the website, and the spreadsheet.

Additionally, a sensitivity analysis for the crush coefficients was established. This involved using various values of b_o, which in turn, generated different crush coefficients. This can be seen in Figure 5. The b_o values were approximately centered around 5 mph, ranging from 4 mph to 6.25 mph. Then the average A and B were computed, which is indicated by the center of the figure. These average crush coefficients were the final values used in EBS computations.

<u>Computing EBS</u>

The EBS equations used in the study were:

$$E=\frac{W}{5}\begin{bmatrix}5G+\\ \frac{A}{2}\left(C_1+2C_2+2C_3+2C_4+2C_5+C_6\right)+\\ \frac{B}{6}\left(C_1^2+2C_2^2+2C_3^2+2C_4^2+2C_5^2+C_6^2+C_1C_2+C_2C_3+C_3C_4+C_4C_5+C_5C_6\right)\end{bmatrix}\left(1+Tan^2\theta\right)$$

which computes the amount of energy dissipated by crush damage, where

$E=$ *the amount of energy dissipated* $(in-lbs)$.
$W=$ *the width of the crushed region* (in).
$G=$ *the "energy" dissipated before permanent deformation occurs* (lbs). $G=\frac{A^2}{2B}$
$A=$ *crush coeffiecient A; the* max *force per inch of damage which will not cause permanent damage* (lb/in).
$B=$ *crush coeffiecient B; the spring stiffness per inch of damage width* (lb/in^2).
$C_1\rightarrow C_6=$ *the crush measurements obtained by PhotoModeler* (in).
$\theta=$ *the angle of the force to the vehicle's surface* (deg).

and

$$EBS=v=\sqrt{\frac{2gE}{w}}$$

which computes the velocity (EBS) of the vehicle, where

$v=$ *the velocity of the vehicle* $(ft/\sec)$.
$g=$ *the gravitational constant* $(ft/\sec^2)$.
$E=$ *the amount of energy dissipated by the crush* $(ft-lbs)$.
$w=$ *the weight of the vehicle* (lbs).

The EBS calculations for each case examined in this study were computed using spreadsheets and can be found in Appendices. Appendix A contains the “within” subject spreadsheets, and Appendix B the “between” spreadsheets. PhotoModeler provided the width of crush and c_1 through c_6 measurements for these spreadsheets.

BOOTSTRAPPING

As mentioned previously, the photographs needed for this study are limited in number due to their poor quality. The authors had quite a dilemma finding twenty (20) sets of photographs suitable for use with PhotoModeler. Since good photographs were limited in number, it was essential to find a statistical technique which focused on small samples. There are a variety of small sample techniques available to researchers. They include, but are not limited to, Bootstrapping, Jackknife, and Cross-Validation. These techniques, which are very computer intensive, fall under the umbrella of Resampling Techniques. Bootstrapping is the most popular of the three, and it is the preferred technique of this study.

The Bootstrapping procedure is quite simple. Figure 6 and these bullets will help illustrate:

- Part A: Start out with an original data set, of say 20 points.
- Part B: The computer algorithm will make a copy of each point, say a billion times
- Part C: All copies are placed in a “bin” and are thoroughly shuffled
- Part D: From this conglomerate, bootstrap samples are extracted.
- Statistical inferences (like variance) are made on the bootstrapped samples

The bootstrapping software utilized in this study was “Resampling Stats for Excel 2.0”, which is an add-in module to Microsoft Excel [4]. For this portion of the work, each set of “seed” data for the “within” and “between” subjects design was entered in an Excel worksheet (these “seed” data sets are precisely the differences found in Tables 2 and 3.) Then resampling with replacement was selected (resampling with replacement is Bootstrapping; resampling without replacement is known as the Jackknife procedure.) 100 independent samples of the twenty data points were subsequently generated along with their associated mean and variances. Appendix C contains "within" bootstrap data; Appendix D contains the "between" bootstrap data. At the end of each of these appendices, a grand total mean and variance of the 100 samples were computed for both studies. These numbers gave rise to the statistical analysis from which the statistics of the complete study were examined.

RESULTS

WITHIN SUBJECTS DESIGN

The test vehicle's reported velocity for this segment was 34.98 mph (NHTSA test # 2708). Table 2 shows the twenty replications of the "within" subjects' estimated EBS values and their differences from the actual test velocity (units are in mph):

Replication #	EBS Using PM's Results	Difference
1	33.75	-1.23
2	33.34	-1.64
3	34.63	-0.35
4	35.50	0.52
5	34.42	-0.56
6	35.17	0.19
7	33.95	-1.03
8	34.24	-0.74
9	33.74	-1.24
10	34.60	-0.38
11	34.79	-0.19
12	33.98	-1.00
13	35.46	0.48
14	34.82	-0.16
15	34.78	-0.20
16	38.55	3.57
17	36.55	1.57
18	37.43	2.45
19	35.21	0.23
20	36.86	1.88

Table 2: Results of the "within" subjects design.

BETWEEN SUBJECTS DESIGN

Table 3 summarizes the study's between subjects EBS estimates, their actual test velocities, and differences (units are in mph):

Case #	EBS Using PM's Results	Actual Test Velocity	Difference	NHTSA Test #
1	33.55	35.30	-1.75	4238
2	32.70	35.20	-2.50	4483
3	35.20	35.10	0.01	3520
4	32.71	35.20	-2.49	4486
5	34.21	35.00	-0.79	3566
6	33.37	34.70	-1.33	4473
7	35.87	34.52	1.35	3666
8	34.20	35.40	-1.20	4462
9	36.46	34.90	1.56	4273
10	33.27	34.74	-1.47	4266
11	32.43	35.00	-2.57	4230
12	35.77	34.56	1.21	4223
13	35.97	34.90	1.07	4263
14	33.24	34.68	-1.44	4265
15	34.36	35.40	-1.04	4479
16	35.54	35.10	0.44	4240
17	34.14	34.89	-0.75	3574
18	36.66	34.73	1.93	4472
19	35.44	34.71	0.73	3639
20	34.95	34.55	0.40	3659

Table 3: Results of the "between" subjects design.

BOOTSTRAPPING

Complete bootstrapping results can be found in Appendix C. The computed variances from the bootstrapped samples are given below:

$\sigma_W^2 = 1.64$ is the "within" variance,

$\sigma_B^2 = 2.02$ is the "between" variance, and

$\sigma_T^2 = \sigma_W^2 + \sigma_B^2 = 3.66$ is the total variance.

CONCLUSION

To get an idea of the repeatability of PhotoModeler as a measurement tool, one needs to look at the proportion of the within variance to the total variance, or $\frac{\sigma_W^2}{\sigma_T^2}$. The other proportion, $\frac{\sigma_B^2}{\sigma_T^2}$, indicates the variability due to vehicle type. The actual computation of the proportions is as follows:

$$\frac{\sigma_W^2}{\sigma_T^2} = \frac{1.64}{3.66} = 44.8\% \quad \text{and} \quad \frac{\sigma_B^2}{\sigma_T^2} = \frac{2.02}{3.66} = 55.2\%.$$

The first proportion indicates that the source of 44.8% of the variability is the technique itself, while the second proportion indicates that 55.2% of the variability is attributable to vehicle type—so the variation on the whole is split in half.

Additionally, a 95% confidence interval for the within subjects design is given by:

$$\bar{x} \pm 1.96 \bullet sd$$
$$0.11 \pm 1.96 \bullet 1.34$$
$$(-2.52, \quad 2.73)$$

A 95% confidence interval for the between subjects design is given by:

$$\bar{x} \pm 1.96 \bullet sd$$
$$-0.43 \pm 1.96 \bullet 1.45$$
$$(-3.26, \quad 2.41)$$

One could interpret the "within" CI with the following statement: "There is a .95 probability that the mean difference will fall between -2.52 mph and 2.73 mph." In other words, a discrepancy of anywhere between 2.5 mph below the actual speed and 2.73 mph above the actual speed could be realized. This is a 5.25 mph range. Conversely, one could interpret the "between" CI with the following: "There is a .95 probability that the mean difference will fall between -3.26 mph and 2.41 mph." In other words, a discrepancy of anywhere between 3.26 mph below and 2.4 mph above the actual speed could be realized. This is a 5.67 mph range.

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4. Resampling Stats For Excel. Version 2.0.

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Figure 1: Camera Calibration Grid

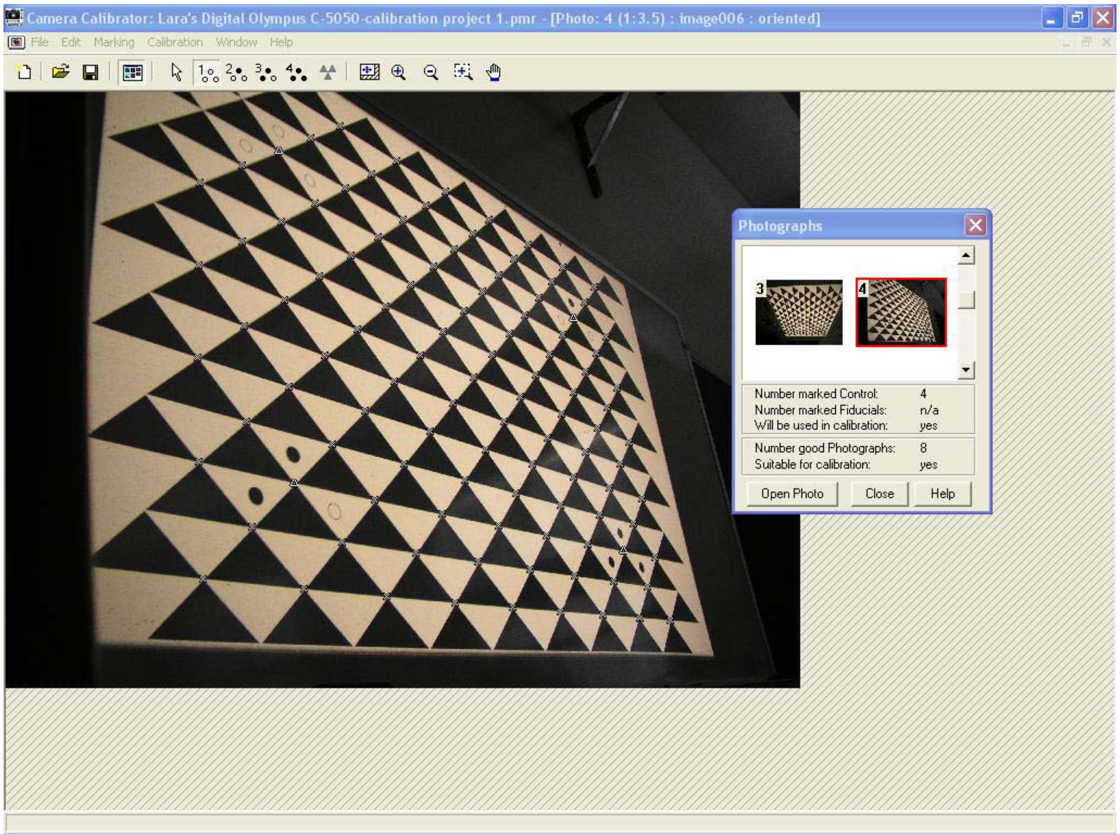


Figure 2: Result of the Olympus C-5050 Calibration Procedure

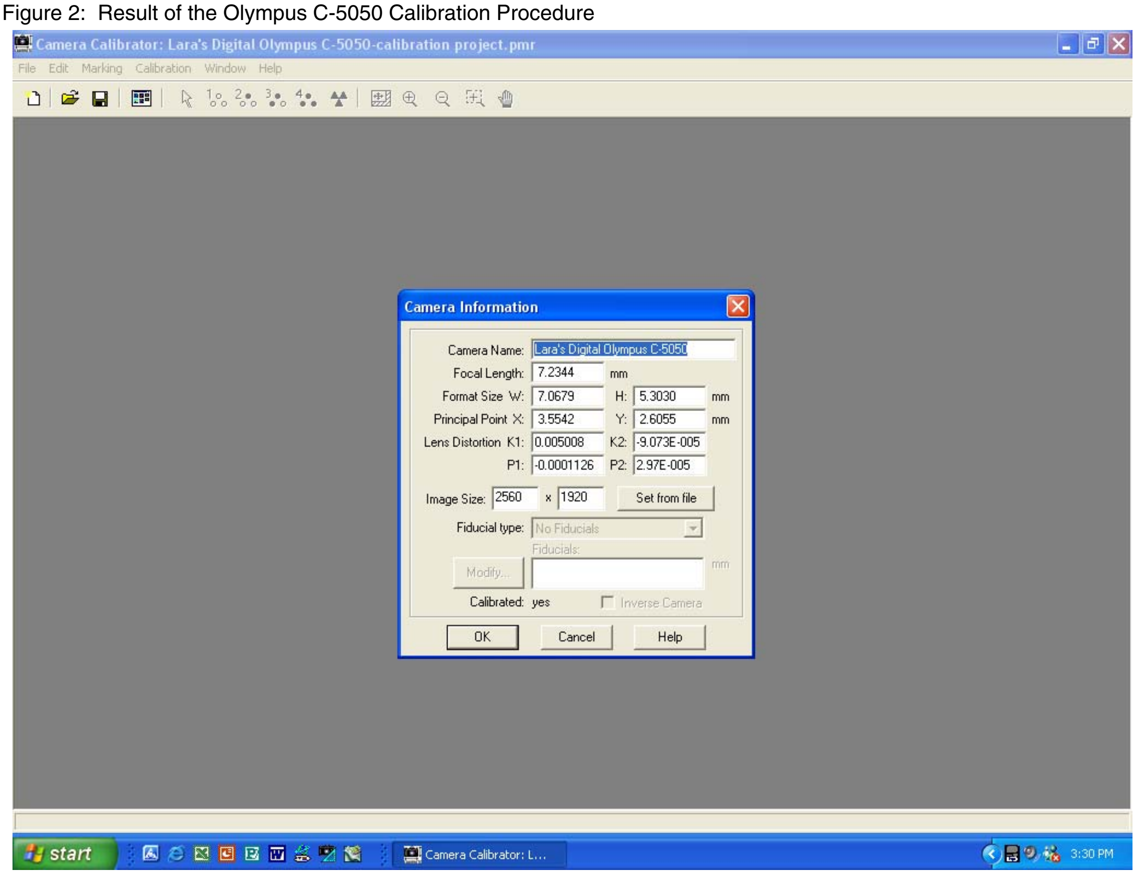


Figure 3: Screenshot of 2003 Subaru Forester

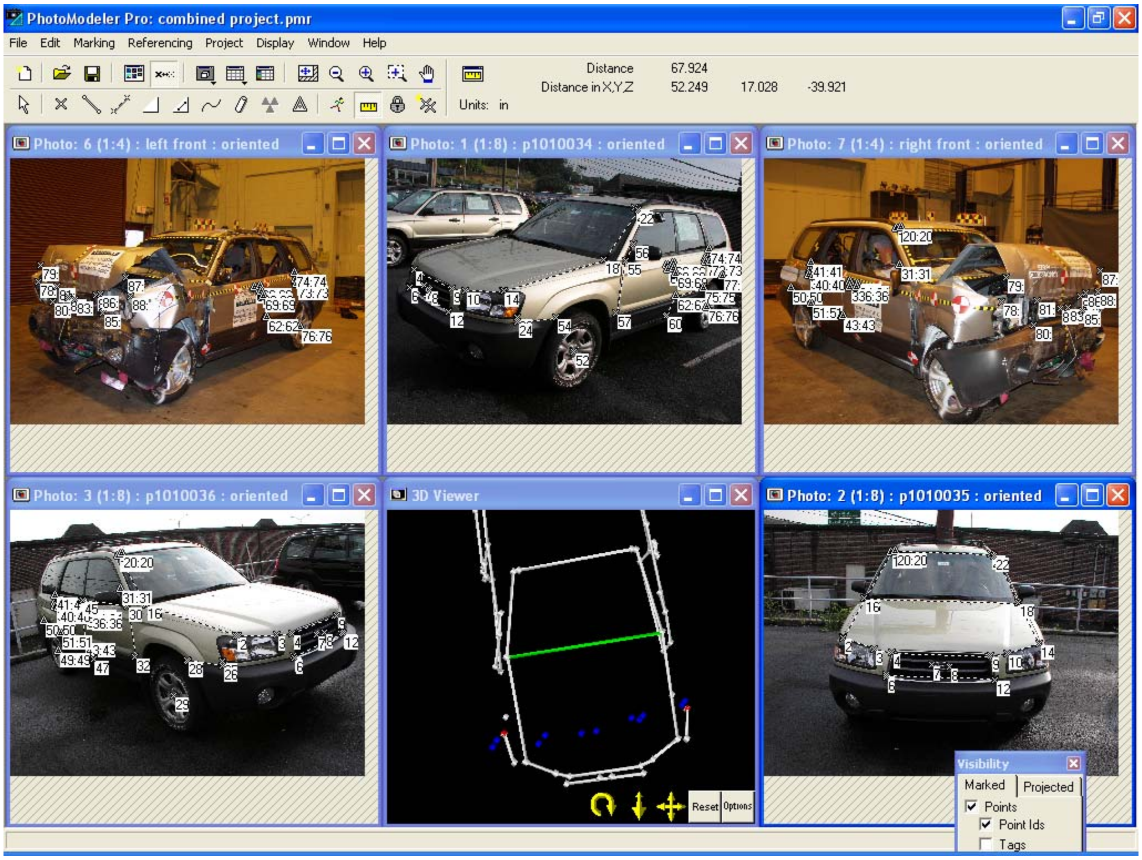


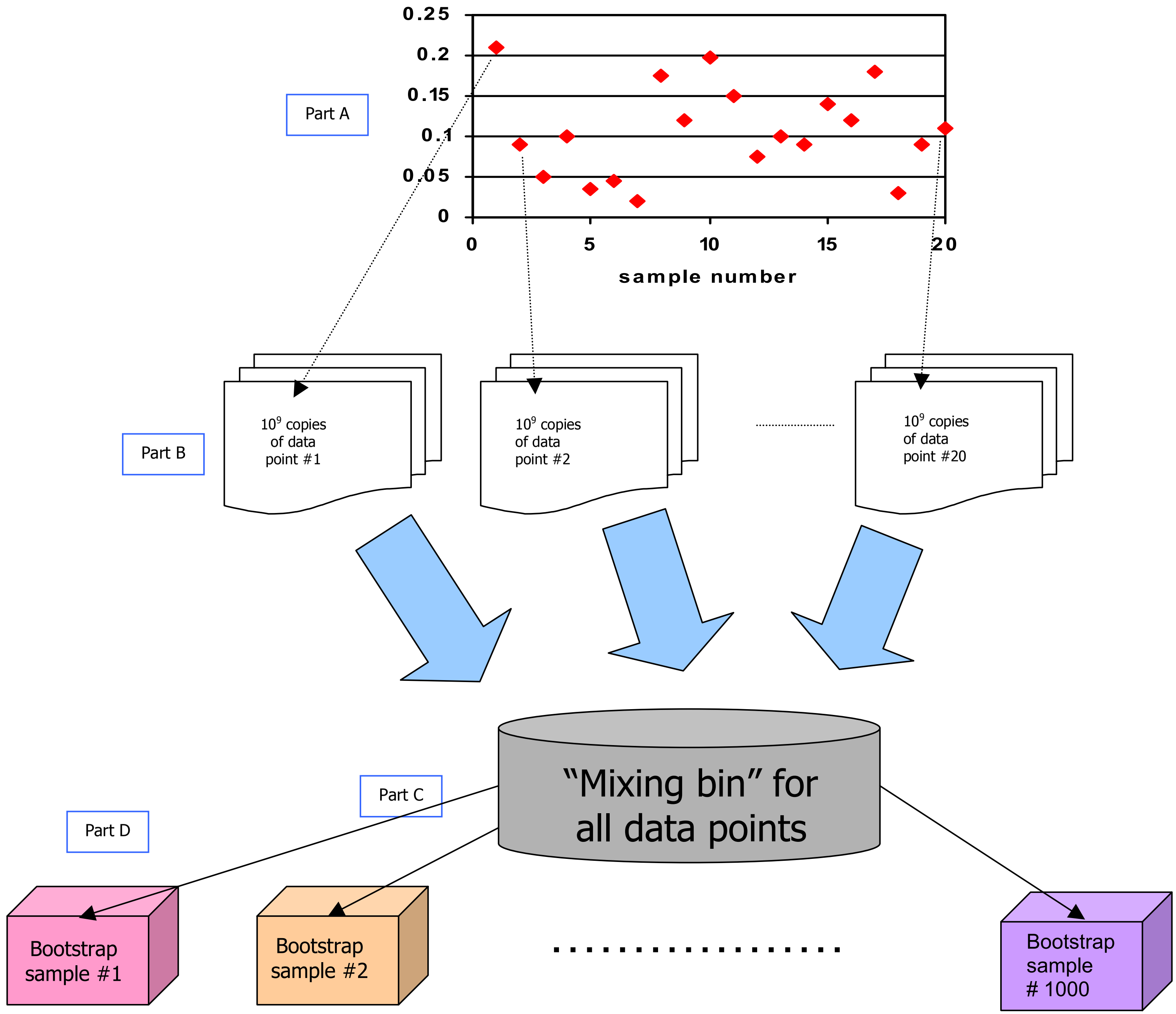
Figure 4: Crush Coefficient Determination

Crash Test Information				2003 Mercedes E320	case #2	
Impact velocity of test:		35.20071	mph		56.65	kph
Maximum speed w/o permanent damage: (b0)		5	mph			
Crush measurements from crash test report:		15.31496	in (c1)		389	mm (c1)
		19.88189	in (c2)		505	mm (c2)
		22.83465	in (c3)		580	mm (c3)
		22.67717	in (c4)		576	mm (c4)
		19.76378	in (c5)		502	mm (c5)
		13.97638	in (c6)		355	mm (c6)
Average crush amount		19.0748	in			
Test vehicle weight		4265.945	lbs		1935	kg
Width of crush damage		71.34646	in		1990	mm
	b1	1.583277	mph/in			
	A	362.6139	lb/in			
	B	109.7281	lb/in^2			

Figure 5: Crush Coefficient Sensitivity Analysis

2003 Mercedes E320		**case #2**												
A =	362.6139	lb/in	A =	347.3349	lb/in	A =	331.7556	lb/in	A =	315.8762	lb/in	A =	299.6966	lb/in
B =	109.7281	lb/in*2	B =	111.5523	lb/in*2	B =	113.3915	lb/in*2	B =	115.2457	lb/in*2	B =	117.115	lb/in*2
W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in
c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in
c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in
c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in
c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in
c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in
c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	599.1576	lbs	G =	540.7398	lbs	G =	485.3176	lbs	G =	432.8915	lbs	G =	383.4609	lbs
E =	2144142	in-lbs	E =	2144565	in-lbs	E =	2144991	in-lbs	E =	2145420	in-lbs	E =	2145853	in-lbs
E=	178678.5	ft-lbs	E=	178713.8	ft-lbs	E=	178749.3	ft-lbs	E=	178785	ft-lbs	E=	178821.1	ft-lbs
w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs
v =	51.93636	ft/sec	v =	51.94148	ft/sec	v =	51.94664	ft/sec	v =	51.95183	ft/sec	v =	51.95707	ft/sec
v =	35.24246	mi/hr	v =	35.24593	mi/hr	v =	35.24943	mi/hr	v =	35.25295	mi/hr	v =	35.25651	mi/hr
bo= 5.0 mph			**bo= 4.75 mph**			**bo= 4.5 mph**			**bo= 4.25 mph**			**bo= 4.0 mph**		
56.65	/h is equal	**35.20071** mph			**A average**	368.9027	lb/in		**B average**	108.8837	lb/in*2	**v average =**	35.24085	mi/hr
A =	377.5929	lb/in	A =	392.2716	lb/in	A =	406.6502	lb/in	A =	420.7286	lb/in	A =	434.5068	lb/in
B =	107.919	lb/in*2	B =	106.1249	lb/in*2	B =	104.3458	lb/in*2	B =	102.5818	lb/in*2	B =	100.8328	lb/in*2
W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in	W (width o	71.34646	in
c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in	c1 =	15.31496	in
c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in	c2 =	19.88189	in
c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in	c3 =	22.83465	in
c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in	c4 =	22.67717	in
c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in	c5 =	19.76378	in
c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in	c6 =	13.97638	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	660.5713	lbs	G =	724.9807	lbs	G =	792.3864	lbs	G =	862.7873	lbs	G =	936.1843	lbs
E =	2143724	in-lbs	E =	2143308	in-lbs	E =	2142896	in-lbs	E =	2142488	in-lbs	E =	2142082	in-lbs
E=	178643.7	ft-lbs	E=	178609	ft-lbs	E=	178574.7	ft-lbs	E=	178540.6	ft-lbs	E=	178506.9	ft-lbs
w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs	w = (weigh	4265.945	lbs
v =	51.93129	ft/sec	v =	51.92626	ft/sec	v =	51.92126	ft/sec	v =	51.91631	ft/sec	v =	51.9114	ft/sec
v =	35.23902	mi/hr	v =	35.2356	mi/hr	v =	35.23221	mi/hr	v =	35.22885	mi/hr	v =	35.22552	mi/hr
	bo= 5.25 mph		**bo= 5.5 mph**			**bo= 5.75 mph**			**bo= 6.0 mph**			**bo= 6.25 mph**		

Figure 6: Explanation of Bootstrapping Procedure



APPENDIX A

WITHIN SUBJECTS DESIGN--1998 FORD CONTOUR									**56.3 km/h**	**=**	**34.9832261095204 mph**			
CASE #1			**CASE #2**			**CASE #3**			**CASE #4**			**CASE #5**		
A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in
B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2
W (width)=	66.726	in	W (width)=	67.147	in	W (width)=	66.777	in	W (width)=	66.608	in	W (width)=	66.985	in
c1 =	4.038	in	c1 =	3.888	in	c1 =	4.149	in	c1 =	4.293	in	c1 =	4.091	in
c2 =	9.374	in	c2 =	8.792	in	c2 =	7.965	in	c2 =	9.336	in	c2 =	9.044	in
c3 =	16.091	in	c3 =	15.172	in	c3 =	16.071	in	c3 =	17.339	in	c3 =	16.941	in
c4 =	17.399	in	c4 =	17.449	in	c4 =	17.879	in	c4 =	17.879	in	c4 =	17.566	in
c5 =	17.255	in	c5 =	17.335	in	c5 =	18.669	in	c5 =	18.564	in	c5 =	17.257	in
c6 =	7.901	in	c6 =	8.128	in	c6 =	9.714	in	c6 =	9.512	in	c6 =	9.095	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	336.87097	lbs	G =	336.871	lbs	G =	336.87	lbs	G =	336.871	lbs	G =	336.871	lbs
E =	1525509.2	in-lbs	E =	1488560	in-lbs	E =	2E+06	in-lbs	E =	1687990	in-lbs	E =	1587167	in-lbs
E=	127125.76	ft-lbs	E=	124047	ft-lbs	E=	133874	ft-lbs	E=	140665.8	ft-lbs	E=	132264	ft-lbs
w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs
v =	49.733122	ft/sec	v =	49.1271	ft/sec	v =	51.036	ft/sec	v =	52.31464	ft/sec	v =	50.72823	ft/sec
v =	33.747405	mi/hr	v =	33.3362	mi/hr	v =	34.631	mi/hr	v =	35.49914	mi/hr	v =	34.42265	mi/hr
CASE #6			**CASE #7**			**CASE #8**			**CASE #9**			**CASE #10**		
A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in
B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2
W (width)=	66.873	in	W (width)=	67.385	in	W (width)=	67.063	in	W (width)=	67.199	in	W (width)=	67.09	in
c1 =	4.14	in	c1 =	3.759	in	c1 =	3.986	in	c1 =	3.967	in	c1 =	3.971	in
c2 =	9.111	in	c2 =	8.728	in	c2 =	8.849	in	c2 =	8.798	in	c2 =	8.905	in
c3 =	18.086	in	c3 =	16.782	in	c3 =	16.995	in	c3 =	16.037	in	c3 =	16.554	in
c4 =	17.644	in	c4 =	17.169	in	c4 =	17.353	in	c4 =	17.299	in	c4 =	17.5	in
c5 =	17.518	in	c5 =	17.096	in	c5 =	17.261	in	c5 =	17.222	in	c5 =	18.161	in
c6 =	9.261	in	c6 =	8.656	in	c6 =	8.852	in	c6 =	8.765	in	c6 =	8.998	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	336.87097	lbs	G =	336.871	lbs	G =	336.87	lbs	G =	336.871	lbs	G =	336.871	lbs
E =	1656541.7	in-lbs	E =	1543935	in-lbs	E =	2E+06	in-lbs	E =	1525121	in-lbs	E =	1603759	in-lbs
E=	138045.14	ft-lbs	E=	128661	ft-lbs	E=	130890	ft-lbs	E=	127093.4	ft-lbs	E=	133646.6	ft-lbs
w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs	w = (weight)	3310	lbs
v =	51.825023	ft/sec	v =	50.0326	ft/sec	v =	50.464	ft/sec	v =	49.72679	ft/sec	v =	50.99268	ft/sec
v =	35.166906	mi/hr	v =	33.9506	mi/hr	v =	34.243	mi/hr	v =	33.74311	mi/hr	v =	34.6021	mi/hr

WITHIN SUBJECTS DESIGN--1998 FORD CONTOUR									**56.3 km/h**	**=**	**34.9832261095204 mph**			
CASE #11			**CASE #12**			**CASE #13**			**CASE #14**			**CASE #15**		
A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in
B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2
W (width)=	66.864	in	W (width)=	67.138	in	W (width)=	66.796	in	W (width)=	66.876	in	W (width)=	66.962	in
c1 =	4.078	in	c1 =	4.017	in	c1 =	4.185	in	c1 =	4.064	in	c1 =	3.981	in
c2 =	9.153	in	c2 =	8.94	in	c2 =	9.213	in	c2 =	9.007	in	c2 =	9.104	in
c3 =	17.22	in	c3 =	16.084	in	c3 =	17.717	in	c3 =	16.883	in	c3 =	17.02	in
c4 =	17.667	in	c4 =	17.468	in	c4 =	17.724	in	c4 =	17.618	in	c4 =	17.549	in
c5 =	17.556	in	c5 =	17.288	in	c5 =	18.323	in	c5 =	18.192	in	c5 =	17.98	in
c6 =	9.288	in	c6 =	9.072	in	c6 =	9.397	in	c6 =	8.986	in	c6 =	8.974	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	336.87097	lbs	G =	336.871	lbs	G =	336.87	lbs	G =	336.871	lbs	G =	336.871	lbs
E =	1621168	in-lbs	E =	1546342	in-lbs	E =	2E+06	in-lbs	E =	1623608	in-lbs	E =	1620430	in-lbs
E=	135097.33	ft-lbs	E=	128862	ft-lbs	E=	140353	ft-lbs	E=	135300.6	ft-lbs	E=	135035.8	ft-lbs
w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs
v =	51.268702	ft/sec	v =	50.0716	ft/sec	v =	52.256	ft/sec	v =	51.30726	ft/sec	v =	51.25703	ft/sec
v =	34.789403	mi/hr	v =	33.9771	mi/hr	v =	35.46	mi/hr	v =	34.81557	mi/hr	v =	34.78148	mi/hr
CASE #16			**CASE #17**			**CASE #18**			**CASE #19**			**CASE #20**		
A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in	A =	354	lb/in
B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2	B =	186	lb/in^2
W (width)=	66.566	in	W (width)=	63.601	in	W (width)=	63.239	in	W (width)=	62.627	in	W (width)=	63.015	in
c1 =	5.179	in	c1 =	5.35	in	c1 =	5.564	in	c1 =	5.005	in	c1 =	4.878	in
c2 =	11.93	in	c2 =	10.303	in	c2 =	10.845	in	c2 =	10.165	in	c2 =	10.527	in
c3 =	18.274	in	c3 =	17.432	in	c3 =	18.436	in	c3 =	18.128	in	c3 =	17.791	in
c4 =	19.344	in	c4 =	19.407	in	c4 =	19.631	in	c4 =	18.416	in	c4 =	19.306	in
c5 =	19.222	in	c5 =	19.373	in	c5 =	20.162	in	c5 =	18.157	in	c5 =	19.868	in
c6 =	12.803	in	c6 =	10.885	in	c6 =	10.116	in	c6 =	9.639	in	c6 =	11.485	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	336.87097	lbs	G =	336.871	lbs	G =	336.87	lbs	G =	336.871	lbs	G =	336.871	lbs
E =	1990970.6	in-lbs	E =	1789259	in-lbs	E =	2E+06	in-lbs	E =	1660541	in-lbs	E =	1819705	in-lbs
E=	165914.21	ft-lbs	E=	149105	ft-lbs	E=	156397	ft-lbs	E=	138378.4	ft-lbs	E=	151642.1	ft-lbs
w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs	w= (weight)	3310	lbs
v =	56.81601	ft/sec	v =	53.8611	ft/sec	v =	55.162	ft/sec	v =	51.88754	ft/sec	v =	54.31738	ft/sec
v =	38.55364	mi/hr	v =	36.5485	mi/hr	v =	37.432	mi/hr	v =	35.20933	mi/hr	v =	36.85815	mi/hr

APPENDIX B

Between Subjects Design-----Using Various Models

2002 Cadillac DeVille		case #1	2003 Mercedes E320		case #2	2001 Buick LeSabre		case #3	2003 Toyota Avalon		case #4	2002 Audi A4		case #5
A =	391.22855	lb/in	A =	368.90273	lb/in	A =	360.1776	lb/in	A =	384.91497	lb/in	A =	425.56978	lb/in
B =	109.60545	lb/in*2	B =	108.88369	lb/in*2	B =	102.1116	lb/in*2	B =	118.64122	lb/in*2	B =	149.56229	lb/in*2
W (width of	70.935	in	W (width o	70.088	in	W (width of	70.301	in	W (width of	65.971	in	W (width of	66.017	in
c1 =	15.684	in	c1 =	17.142	in	c1 =	18.489	in	c1 =	15.445	in	c1 =	12.025	in
c2 =	17.07	in	c2 =	18.621	in	c2 =	20.557	in	c2 =	16.065	in	c2 =	18.162	in
c3 =	19.254	in	c3 =	19.126	in	c3 =	22.23	in	c3 =	20.026	in	c3 =	18.831	in
c4 =	21.119	in	c4 =	19.839	in	c4 =	21.49	in	c4 =	20.087	in	c4 =	18.701	in
c5 =	21.349	in	c5 =	18.018	in	c5 =	20.034	in	c5 =	15.46	in	c5 =	16.803	in
c6 =	20.147	in	c6 =	17.616	in	c6 =	16.578	in	c6 =	14.61	in	c6 =	8.965	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	698.2306917	lbs	G =	624.9293361	lbs	G =	635.2261	lbs	G =	624.4016	lbs	G =	605.46558	lbs
E =	2054101.75	in-lbs	E =	1846235.645	in-lbs	E =	2056903	in-lbs	E =	1672004.5	in-lbs	E =	1900287.5	in-lbs
E=	171175.1458	ft-lbs	E=	153852.9704	ft-lbs	E=	171408.6	ft-lbs	E=	139333.7	ft-lbs	E=	158357.29	ft-lbs
w = (weigh	4508.453262	lbs	w = (weig	4265.944773	lbs	w = (weight	4102.803	lbs	w = (weight	3862.4988	lbs	w = (weight	4012.4132	lbs
v =	49.44808772	ft/sec	v =	48.19347719	ft/sec	v =	51.87031	ft/sec	v =	48.198869	ft/sec	v =	50.414927	ft/sec
v =	**33.55398888**	mi/hr	v =	**32.70264782**	mi/hr	**v =**	**35.19764**	mi/hr	v =	**32.706306**	mi/hr	v =	**34.210057**	mi/hr

2003 Hyundai Accent		case #6	2001 Chevy Malibu		case #7	2003 Honda S2000		case #8	2002 Mini Cooper		case #9	2003 Toyota Corolla		case #10
A =	325.15176	lb/in	A =	345.46882	lb/in	A =	437.046	lb/in	A =	557.569	lb/in	A =	278.49701	lb/in
B =	102.2357	lb/in*2	B =	101.95357	lb/in*2	B =	171.437	lb/in*2	B =	285.702	lb/in*2	B =	79.30638	lb/in*2
W (width	57.173	in	W (width	61.338	in	W (width o	64.218	in	W (width o	58.425	in	W (width o	59.993	in
c1 =	11.896	in	c1 =	22.67	in	c1 =	12.51	in	c1 =	7.434	in	c1 =	14.593	in
c2 =	18.695	in	c2 =	24.821	in	c2 =	16.543	in	c2 =	11.563	in	c2 =	19.252	in
c3 =	19.757	in	c3 =	25.071	in	c3 =	16.315	in	c3 =	15.588	in	c3 =	20.375	in
c4 =	18.34	in	c4 =	20.667	in	c4 =	12.301	in	c4 =	12.127	in	c4 =	22.053	in
c5 =	18.872	in	c5 =	16.548	in	c5 =	13.549	in	c5 =	11.851	in	c5 =	21.267	in
c6 =	16.219	in	c6 =	6.827	in	c6 =	10.287	in	c6 =	10.887	in	c6 =	20.399	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	517.05846	lbs	G =	585.309105	lbs	G =	557.084	lbs	G =	544.069	lbs	G =	488.99335	lbs
E =	1313086.8	in-lbs	E =	1845419.17	in-lbs	E =	1528540	in-lbs	E =	1665460	in-lbs	E =	1332912.1	in-lbs
E=	109423.9	ft-lbs	E=	153784.931	ft-lbs	E=	127378	ft-lbs	E=	138788	ft-lbs	E=	111076	ft-lbs
w = (weig	2914.5111	lbs	w = (wei	3545.03318	lbs	w = (weigh	3229.77	lbs	w = (weigh	3095.29	lbs	w = (weigh	2976.2405	lbs
v =	49.171808	ft/sec	v =	52.8554376	ft/sec	v =	50.397	ft/sec	v =	53.7364	ft/sec	v =	49.025163	ft/sec
v =	**33.366514**	mi/hr	v =	**35.8661143**	mi/hr	v =	**34.1979**	mi/hr	v =	**36.4639**	mi/hr	v =	33.267005	mi/hr

2002 Chrysler PT Cruiser		case #11	2002 Ford Explorer Spt		case #12	2002 Nissan Pathfdr		case #13	2002 Toyota Highldr		case #14	2003 Subaru Forester		case #15
A =	487.37757	lb/in	A =	577.3843	lb/in	A =	406.512	lb/in	A =	424.084	lb/in	A =	396.79779	lb/in
B =	183.379	lb/in*2	B =	226.37027	lb/in*2	B =	109.969	lb/in*2	B =	133.258	lb/in*2	B =	127.71167	lb/in*2
W (width c	66.903	in	W (width	62.313	in	W (width c	61.163	in	W (width c	69.39	in	W (width c	67.924	in
c1 =	13.631	in	c1 =	12.96	in	c1 =	16.98	in	c1 =	4.994	in	c1 =	15.763	in
c2 =	11.59	in	c2 =	15.249	in	c2 =	27.44	in	c2 =	16.132	in	c2 =	16.169	in
c3 =	15.659	in	c3 =	16.19	in	c3 =	27.873	in	c3 =	16.305	in	c3 =	16.479	in
c4 =	13.537	in	c4 =	17.446	in	c4 =	21.03	in	c4 =	21.242	in	c4 =	16.819	in
c5 =	13.031	in	c5 =	16.306	in	c5 =	25.835	in	c5 =	20.838	in	c5 =	19.231	in
c6 =	12.584	in	c6 =	14.023	in	c6 =	9.429	in	c6 =	17.863	in	c6 =	15.123	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	647.66657	lbs	G =	736.343668	lbs	G =	751.356	lbs	G =	674.808	lbs	G =	616.42169	lbs
E =	1584425.7	in-lbs	E =	2367994.79	in-lbs	E =	2471661	in-lbs	E =	1992659	in-lbs	E =	1727619.1	in-lbs
E=	132035.47	ft-lbs	E=	197332.899	ft-lbs	E=	205972	ft-lbs	E=	166055	ft-lbs	E=	143968.26	ft-lbs
w = (weigh	3723.6076	lbs	w = (wei	4572.38732	lbs	w = (weigh	4720.1	lbs	w = (weigh	4455.54	lbs	w = (weigh	3615.5811	lbs
v =	47.786617	ft/sec	v =	52.719487	ft/sec	v =	53.0117	ft/sec	v =	48.9912	ft/sec	v =	50.639249	ft/sec
v =	**32.426565**	mi/hr	v =	**35.7738623**	mi/hr	v =	**35.9721**	mi/hr	v =	**33.244**	mi/hr	v =	**34.362275**	mi/hr

2002 Dodge Ram 1500		case #16	2001 Nissan Frontier		case #17	2003 Chevy Silverado		case #18	01 Dodge Ram Wagon V		case #19	2001 Dodge Caravan		case #20
A =	520.19252	lb/in	A =	434.13947	lb/in	A =	374.096	lb/in	A =	468.9903	lb/in	A =	490.62915	lb/in
B =	169.96174	lb/in*2	B =	126.4965	lb/in*2	B =	91.75556	lb/in*2	B =	153.2546	lb/in*2	B =	177.62436	lb/in*2
W (w idth of	75.441	in	W (w idth c	59.114	in	W (w idth of	63.216	in	W (w idth of	68.947	in	W (w idth of	66.771	in
c1 =	14.924	in	c1 =	16.943	in	c1 =	23.045	in	c1 =	11.296	in	c1 =	13.209	in
c2 =	22.356	in	c2 =	16.34	in	c2 =	28.999	in	c2 =	14.495	in	c2 =	18.65	in
c3 =	19.527	in	c3 =	24.804	in	c3 =	30.226	in	c3 =	18.73	in	c3 =	19.543	in
c4 =	20.137	in	c4 =	24.259	in	c4 =	30.027	in	c4 =	12.315	in	c4 =	17.956	in
c5 =	13.348	in	c5 =	20.848	in	c5 =	24.911	in	c5 =	28.105	in	c5 =	13.865	in
c6 =	11.513	in	c6 =	12.451	in	c6 =	18.412	in	c6 =	20.757	in	c6 =	4.388	in
θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees	θ =	0	degrees
G =	796.0622722	lbs	G =	744.9893057	lbs	G =	762.6123	lbs	G =	717.603	lbs	G =	677.601211	lbs
E =	2837086.734	in-lbs	E =	2133006.34	in-lbs	E =	2829007	in-lbs	E =	2446384	in-lbs	E =	2124822.91	in-lbs
E=	236423.8945	ft-lbs	E=	177750.5283	ft-lbs	E=	235750.6	ft-lbs	E=	203865.3	ft-lbs	E=	177068.576	ft-lbs
w = (w eigh	5551.239762	lbs	w = (w eig	4521.680997	lbs	w = (w eight	5200.705	lbs	w = (w eight	4812.691	lbs	w = (w eight	4299.01411	lbs
v =	52.37133258	ft/sec	v =	50.3151097	ft/sec	v =	54.0304	ft/sec	v =	52.23007	ft/sec	v =	51.5026108	ft/sec
v =	**35.53761515**	mi/hr	v =	**34.14232399**	mi/hr	v =	**36.66341**	mi/hr	v =	**35.44176**	mi/hr	v =	34.9481266	mi/hr

APPENDIX C

The Actual Within Differences (Seed Data)		Bootstrap Sample 1	2	3	4	5	6	7	8	9	10
-1.23582145		-0.19382	1.874921	0.226101	0.515916	1.565276	0.476458	-0.73981	0.515916	-0.73981	-0.73981
-1.647020556		-1.64702	0.226101	0.515916	1.874921	0.226101	0.226101	-0.35175	-0.16766	-0.73981	-0.16766
-0.351750929		-0.38112	2.448286	-1.23582	3.570414	0.18368	-0.16766	-1.23582	-1.64702	1.565276	1.874921
0.515916268		-1.24012	2.448286	-1.00617	-0.38112	-1.00617	-0.73981	1.874921	-0.38112	-0.16766	2.448286
-0.560572586		-0.19382	-1.03263	1.874921	-0.56057	-0.16766	-1.24012	0.476458	-0.35175	-0.16766	1.874921
0.183679795		0.515916	3.570414	0.226101	0.226101	-0.20174	-0.56057	1.874921	2.448286	-0.73981	-1.03263
-1.032627733		-0.35175	0.476458	-0.56057	-1.03263	0.226101	0.515916	0.226101	3.570414	-0.73981	-0.19382
-0.73981005		0.18368	3.570414	0.515916	2.448286	0.515916	-0.38112	-1.23582	-1.24012	-0.19382	-0.73981
-1.240118814		1.565276	-0.73981	-1.00617	-0.35175	0.226101	3.570414	-1.00617	-0.56057	1.874921	0.476458
-0.381123119		1.565276	0.226101	2.448286	-1.23582	-0.56057	0.226101	-0.38112	-1.03263	1.874921	-1.00617
-0.193823157		-1.64702	1.874921	-1.24012	0.18368	0.476458	0.476458	-1.00617	-0.35175	-0.20174	-1.03263
-1.006171272		-0.73981	-0.16766	0.515916	3.570414	0.515916	-0.73981	-0.16766	-0.73981	1.565276	-0.56057
0.476458007		-1.64702	-1.24012	2.448286	0.18368	-0.73981	-0.19382	0.18368	1.874921	1.874921	-1.03263
-0.167657171		-0.56057	0.515916	3.570414	-1.03263	-1.23582	-1.24012	0.226101	-0.56057	0.476458	-1.24012
-0.201743692		-0.56057	-0.56057	-0.16766	3.570414	-1.00617	2.448286	-1.23582	0.476458	0.226101	1.565276
3.570413842		0.476458	-0.35175	-1.03263	-1.23582	0.226101	0.18368	-1.23582	0.476458	1.565276	-0.73981
1.565275502		-0.73981	2.448286	-0.38112	-0.16766	-0.38112	0.515916	0.18368	-1.24012	-1.64702	-1.00617
2.448286293		-1.23582	-0.19382	-0.73981	0.476458	-1.23582	-1.24012	-1.03263	0.476458	-1.00617	-1.24012
0.226101071		-1.23582	-1.00617	-1.00617	1.565276	0.515916	-0.56057	-0.16766	-0.73981	-1.24012	-1.03263
1.874921215		-0.38112	-0.35175	-1.03263	-0.38112	-0.56057	-1.24012	1.565276	1.565276	0.226101	-0.73981
	mean	-0.42243	0.701791	0.146649	0.590322	-0.12089	0.016774	-0.15926	0.119563	0.183291	-0.21323
	variance	0.884266	2.423431	1.999573	2.620474	0.520561	1.470753	1.023308	1.808811	1.323174	1.406715

		11	12	13	14	15	16	17	18	19	20
		3.570414	1.565276	-0.35175	0.476458	-0.35175	0.476458	-0.19382	-1.00617	-0.20174	-0.16766
		-1.00617	0.515916	0.476458	-1.03263	-1.03263	-1.23582	-0.35175	-1.64702	-0.38112	-1.24012
		-1.23582	2.448286	2.448286	-1.64702	-1.24012	-1.03263	3.570414	0.18368	-0.35175	-1.23582
		-1.64702	-1.23582	-0.73981	-0.16766	0.476458	-0.20174	-0.20174	-0.73981	-0.73981	0.515916
		-0.16766	0.476458	0.18368	0.476458	-1.24012	0.515916	-1.23582	0.18368	-0.35175	3.570414
		0.515916	-1.24012	1.565276	-1.00617	-1.03263	-1.64702	0.18368	-1.24012	-0.16766	-1.00617
		-0.35175	0.226101	-1.03263	-1.24012	-0.35175	-1.00617	-0.20174	1.874921	3.570414	2.448286
		0.515916	-0.20174	-1.03263	2.448286	2.448286	-0.16766	-1.00617	-1.64702	0.476458	-1.03263
		-0.16766	1.874921	-1.64702	1.874921	-1.64702	-0.19382	0.226101	-0.38112	-1.00617	-1.23582
		-1.00617	0.515916	-0.20174	-0.35175	0.476458	-1.00617	-1.64702	2.448286	-0.35175	-0.20174
		0.476458	0.515916	-1.03263	-1.64702	-1.00617	3.570414	1.565276	-0.38112	1.874921	0.18368
		0.18368	-1.03263	0.476458	1.874921	-0.73981	-0.35175	-1.23582	-1.24012	0.515916	-0.20174
		2.448286	-1.00617	-0.20174	-1.64702	-0.20174	1.874921	-1.03263	-1.23582	2.448286	-0.73981
		0.226101	-0.38112	1.565276	0.226101	-0.73981	-0.16766	2.448286	-0.16766	-0.56057	-1.64702
		-1.23582	0.476458	0.226101	1.874921	-0.38112	-1.24012	-0.38112	-0.35175	0.226101	1.874921
		3.570414	-0.56057	-1.23582	-0.73981	3.570414	-0.38112	-1.23582	0.226101	0.476458	-0.16766
		-0.56057	-1.64702	0.515916	-1.00617	1.874921	-0.16766	1.565276	3.570414	-0.73981	-1.00617
		-1.03263	-1.03263	-1.00617	0.515916	-0.20174	-1.64702	0.515916	-0.35175	0.476458	0.515916
		-1.23582	-0.56057	-0.38112	-1.64702	0.18368	3.570414	1.874921	0.18368	0.515916	0.476458
		0.226101	3.570414	0.476458	-0.73981	-1.23582	1.874921	3.570414	-1.03263	-0.56057	-0.19382
	mean	0.10431	0.164363	-0.04646	-0.15521	-0.1186	0.071834	0.339841	-0.13757	0.258411	-0.02453
	variance	2.265645	1.853053	1.117482	1.766093	1.815433	2.364711	2.510927	1.855349	1.342475	1.797738

		21	22	23	24	25	26	27	28	29	30
		-1.00617	-1.03263	-1.23582	2.448286	2.448286	-0.19382	-0.56057	-0.20174	-0.20174	-0.73981
		0.18368	-1.23582	-0.35175	0.476458	-1.24012	0.18368	1.874921	-0.19382	-1.64702	2.448286
		-0.73981	1.874921	-1.03263	-0.20174	-0.19382	0.515916	-1.24012	1.565276	-0.73981	1.565276
		-0.19382	0.515916	-1.64702	-1.23582	3.570414	-0.20174	0.476458	3.570414	1.874921	-0.38112
		-1.00617	0.18368	0.18368	3.570414	0.476458	-0.73981	2.448286	-1.03263	3.570414	2.448286
		-1.03263	0.515916	0.226101	0.18368	-0.56057	-1.64702	2.448286	-1.23582	-1.24012	-1.64702
		1.565276	-0.35175	-0.35175	0.476458	-0.38112	-0.38112	-0.38112	-0.19382	1.565276	1.874921
		0.18368	1.874921	-0.19382	-1.03263	0.515916	1.565276	-0.20174	-0.16766	-0.19382	0.476458
		-0.19382	-1.03263	3.570414	-1.64702	-1.03263	-1.24012	-0.73981	-0.73981	0.18368	2.448286
		1.565276	-0.56057	0.18368	2.448286	-1.03263	-1.03263	-1.23582	-0.20174	1.565276	-1.00617
		2.448286	-0.56057	3.570414	-1.00617	0.476458	-0.16766	-0.19382	-1.23582	3.570414	1.565276
		0.226101	-1.23582	0.476458	0.226101	0.476458	-1.00617	-0.73981	0.226101	1.874921	-0.56057
		-1.24012	-1.64702	0.476458	0.18368	-0.56057	-1.24012	-0.73981	-0.16766	-0.20174	-0.16766
		-0.38112	-1.23582	0.476458	-1.23582	-0.35175	-0.20174	1.565276	0.18368	0.18368	1.565276
		-0.38112	-0.19382	0.226101	-0.20174	3.570414	-1.24012	0.18368	1.565276	0.18368	-1.64702
		1.565276	-1.03263	-0.35175	-1.23582	-0.38112	3.570414	0.476458	3.570414	-1.24012	-1.24012
		-0.35175	-0.19382	0.18368	-1.03263	-1.03263	-1.03263	-0.73981	1.565276	0.476458	1.565276
		-0.35175	0.515916	-0.16766	-1.03263	0.226101	1.565276	-0.38112	-0.73981	-1.23582	1.874921
		-0.20174	3.570414	1.874921	0.18368	-1.24012	-1.24012	-0.73981	-1.23582	0.226101	1.874921
		-1.00617	-1.24012	0.18368	-1.23582	-0.56057	-0.73981	-0.73981	-0.56057	0.515916	-1.03263
	mean	-0.01743	-0.12507	0.314992	-0.04504	0.159642	-0.2452	0.042009	0.216985	0.454527	0.564253
	variance	1.068388	1.745082	1.773052	2.02191	2.086722	1.586405	1.338851	2.066258	2.20643	2.224469

The Actual Within		Bootstrap Sample									
Differences (Seed Data)		31	32	33	34	35	36	37	38	39	40
-1.23582145		0.476458	-1.00617	1.565276	-1.03263	3.570414	0.515916	-1.03263	-1.24012	-1.00617	-1.23582
-1.647020556		0.515916	-1.00617	-1.03263	-0.35175	-0.16766	0.226101	-1.23582	-1.64702	-0.35175	-0.20174
-0.351750929		0.18368	-0.73981	-0.35175	2.448286	-0.73981	-0.56057	-0.16766	-0.73981	-1.64702	-0.38112
0.515916268		0.226101	0.476458	1.565276	0.476458	-1.24012	3.570414	-1.23582	1.565276	0.515916	-1.24012
-0.560572586		-1.24012	3.570414	-1.23582	-1.03263	-0.16766	0.226101	-0.19382	-0.35175	-0.19382	0.515916
0.183679795		-1.03263	-1.03263	3.570414	-0.19382	0.515916	1.874921	-1.03263	-1.03263	-1.03263	1.874921
-1.032627733		1.565276	0.476458	0.515916	-0.56057	0.18368	-1.00617	0.18368	-1.23582	-1.64702	-0.35175
-0.73981005		-0.20174	3.570414	1.874921	-0.73981	1.565276	-0.35175	1.565276	-0.20174	2.448286	-0.73981
-1.240118814		-1.00617	0.226101	-1.23582	-0.20174	0.18368	0.226101	0.226101	0.18368	0.18368	0.515916
-0.381123119		-1.23582	-1.00617	0.476458	-1.03263	3.570414	-0.38112	3.570414	-1.64702	-1.24012	-0.56057
-0.193823157		0.515916	2.448286	3.570414	-0.38112	-1.23582	-1.03263	-1.03263	-0.73981	1.874921	-0.19382
-1.006171272		-1.24012	1.565276	3.570414	0.476458	-0.19382	-0.35175	-0.73981	-1.00617	0.515916	2.448286
0.476458007		-0.16766	0.515916	1.874921	0.476458	-1.00617	0.18368	-1.03263	0.18368	0.226101	3.570414
-0.167657171		-1.23582	-0.19382	-1.23582	-1.64702	-0.56057	2.448286	3.570414	-0.73981	0.226101	-0.73981
-0.201743692		-0.35175	0.476458	-0.20174	-0.35175	1.565276	-1.03263	-0.16766	-0.38112	3.570414	-0.19382
3.570413842		-0.16766	0.18368	1.874921	-1.03263	0.18368	2.448286	-0.19382	-1.00617	0.476458	-0.38112
1.565275502		0.515916	-1.24012	0.476458	0.476458	-1.03263	-0.20174	0.515916	-0.38112	-0.20174	-0.73981
2.448286293		0.476458	3.570414	-0.73981	2.448286	0.476458	-0.16766	-1.00617	-1.23582	1.874921	-1.03263
0.226101071		-0.19382	-0.56057	0.476458	-0.19382	0.18368	-0.19382	-0.73981	-1.03263	-0.56057	0.515916
1.874921215		2.448286	-0.56057	1.874921	0.476458	0.18368	-0.35175	-0.35175	-0.35175	-0.73981	3.570414
	mean	-0.05747	0.486692	0.862669	-0.07365	0.291895	0.30441	-0.02654	-0.65188	0.164603	0.250991
	variance	0.956987	2.623009	2.612008	1.12436	1.865942	1.628076	1.998138	0.54812	1.906925	2.166393

	41	42	43	44	45	46	47	48	49	50
	0.476458	0.515916	0.515916	1.874921	-0.20174	-1.00617	-0.73981	-0.19382	-1.23582	2.448286
	0.515916	-0.16766	-1.03263	-1.00617	1.874921	3.570414	-1.64702	3.570414	-0.19382	0.515916
	1.874921	-0.35175	3.570414	-1.24012	-0.19382	-0.16766	-1.03263	-0.35175	0.476458	1.874921
	-0.19382	1.874921	-0.38112	-0.19382	0.226101	1.874921	-0.56057	1.565276	0.515916	-0.56057
	-0.16766	-1.23582	0.515916	0.226101	-0.16766	-0.73981	-1.03263	-0.16766	0.226101	-1.00617
	-1.03263	-0.38112	-1.00617	1.874921	-1.24012	-1.24012	-1.64702	0.476458	-0.16766	1.874921
	0.18368	-0.16766	-1.23582	-0.35175	-1.64702	0.515916	0.226101	-0.38112	-1.64702	-0.38112
	-1.23582	-1.23582	-1.03263	0.18368	-0.38112	-0.20174	-0.35175	0.226101	0.476458	-0.20174
	-0.16766	0.18368	-1.24012	-0.16766	-1.03263	-1.03263	-0.38112	1.565276	1.874921	0.226101
	-0.38112	2.448286	1.565276	-0.20174	-0.35175	-1.24012	0.476458	-0.16766	3.570414	-0.20174
	1.874921	2.448286	-1.23582	0.515916	-0.16766	0.476458	0.515916	1.565276	-1.03263	-0.56057
	0.476458	0.18368	0.515916	-0.20174	3.570414	-0.20174	-0.19382	2.448286	1.874921	3.570414
	-1.64702	-1.23582	-0.19382	-1.64702	1.874921	-1.24012	-1.24012	-1.00617	0.476458	0.226101
	-0.38112	0.226101	2.448286	-1.64702	2.448286	-0.35175	-0.19382	-0.73981	-1.03263	-0.16766
	-1.03263	-1.64702	0.18368	-1.64702	-0.35175	2.448286	-0.73981	0.226101	-1.64702	1.565276
	3.570414	-0.19382	-0.19382	0.515916	3.570414	-0.35175	0.18368	-0.38112	-1.23582	2.448286
	2.448286	-0.38112	0.476458	0.476458	-0.38112	-1.23582	-0.19382	-1.23582	-0.38112	-1.24012
	3.570414	2.448286	-0.38112	-1.03263	-0.38112	-1.24012	-1.23582	0.226101	3.570414	1.565276
	-0.20174	-1.03263	-0.73981	1.565276	-0.20174	1.565276	0.515916	-1.64702	0.226101	2.448286
	-0.16766	-1.24012	-1.23582	-0.20174	-1.24012	3.570414	-0.20174	-1.03263	-0.56057	1.874921
mean	0.419129	0.05294	-0.00584	-0.11526	0.281284	0.188607	-0.47367	0.228235	0.207702	0.81595
variance	2.241405	1.696476	1.706751	1.164494	2.352757	2.520989	0.463753	1.726566	2.307931	1.92962

	51	52	53	54	55	56	57	58	59	60
	-1.00617	1.874921	-0.16766	-0.35175	1.874921	1.565276	-0.16766	0.226101	1.565276	-0.16766
	0.226101	0.18368	-1.64702	-1.23582	2.448286	-1.23582	0.476458	0.515916	-0.19382	-0.56057
	-0.19382	-0.35175	0.226101	-1.23582	1.874921	-0.73981	-0.56057	0.476458	-1.00617	-0.38112
	-0.38112	3.570414	0.18368	-0.16766	-1.24012	0.476458	-0.38112	-0.56057	-0.38112	0.515916
	-0.19382	3.570414	-0.20174	2.448286	-1.23582	-0.35175	1.565276	3.570414	-0.16766	0.476458
	-0.73981	3.570414	-1.00617	-1.03263	-1.64702	-1.24012	-1.03263	3.570414	0.515916	0.226101
	-0.20174	-0.35175	-1.00617	-1.03263	-0.38112	0.226101	0.226101	-0.19382	-1.23582	-0.19382
	-0.16766	-0.19382	-0.38112	-1.00617	-1.24012	-0.56057	2.448286	-0.20174	-0.19382	2.448286
	-0.20174	-1.23582	0.226101	-0.16766	-0.16766	-1.03263	1.874921	1.874921	-0.19382	-1.23582
	1.874921	0.476458	0.476458	-0.16766	-0.16766	-0.19382	-0.19382	1.874921	0.476458	-0.20174
	-0.73981	-1.64702	-0.16766	-0.20174	0.226101	-1.03263	-0.38112	-0.56057	1.874921	-1.24012
	1.874921	-0.19382	3.570414	1.565276	0.515916	1.874921	-0.16766	0.18368	0.226101	-0.35175
	0.226101	-1.03263	-1.23582	0.226101	-0.20174	-0.35175	-0.20174	-1.23582	1.874921	1.874921
	-1.64702	1.565276	1.874921	-0.38112	-0.16766	2.448286	3.570414	3.570414	-1.03263	0.18368
	-0.16766	0.515916	2.448286	-1.00617	-1.64702	-1.24012	-1.00617	-1.24012	1.565276	-0.16766
	0.18368	0.476458	-1.00617	-0.38112	-0.16766	0.476458	-1.64702	-0.16766	-1.64702	0.18368
	1.565276	0.476458	2.448286	-1.64702	-1.64702	-1.23582	-1.23582	-1.03263	1.565276	0.515916
	2.448286	0.515916	-0.73981	0.226101	2.448286	2.448286	-1.00617	-1.64702	-1.00617	-0.56057
	1.874921	-0.56057	0.515916	0.476458	0.515916	1.874921	-1.24012	1.565276	-0.20174	1.874921
	-0.19382	-0.35175	-0.35175	0.476458	-1.24012	0.18368	0.226101	-1.24012	-1.24012	-1.00617
mean	0.222	0.543869	0.202953	-0.22981	-0.06232	0.117977	0.058296	0.467422	0.058211	0.111643
variance	1.22925	2.40037	1.90774	0.968843	1.794843	1.638894	1.819832	2.792084	1.265954	0.987522

The Actual Within Differences (Seed Data)		Bootstrap Sample 61	62	63	64	65	66	67	68	69	70
-1.23582145		-1.64702	-1.64702	-0.56057	2.448286	2.448286	-1.24012	-1.03263	-0.56057	2.448286	1.565276
-1.647020556		-0.73981	-0.16766	-1.03263	0.476458	-1.23582	-0.38112	0.18368	-0.16766	2.448286	-0.19382
-0.351750929		1.565276	-1.03263	3.570414	1.874921	-0.20174	0.476458	-0.20174	0.18368	0.515916	-0.19382
0.515916268		-0.35175	-0.38112	1.874921	0.226101	-0.19382	2.448286	-0.38112	-1.64702	-1.00617	0.226101
-0.560572586		3.570414	0.18368	-0.20174	1.874921	-1.03263	0.18368	-1.23582	-1.24012	-0.38112	-1.00617
0.183679795		-1.00617	-0.73981	-1.64702	-0.73981	-0.19382	-0.16766	-0.56057	0.226101	-1.00617	-0.35175
-1.032627733		-1.24012	1.565276	0.226101	0.515916	0.18368	1.565276	0.476458	0.476458	-0.16766	2.448286
-0.73981005		0.226101	-1.00617	-1.03263	-0.73981	1.874921	-1.03263	-0.56057	0.226101	0.226101	-0.38112
-1.240118814		2.448286	-1.03263	-1.64702	-0.73981	-0.35175	2.448286	-0.16766	0.18368	-0.56057	0.515916
-0.381123119		-0.38112	1.874921	0.476458	-0.16766	-1.23582	-1.24012	-1.23582	3.570414	-1.03263	0.476458
-0.193823157		-1.00617	-1.03263	-0.38112	-0.20174	-1.23582	1.565276	-1.23582	1.874921	-1.64702	-0.35175
-1.006171272		-1.03263	-1.24012	-0.56057	-1.00617	0.515916	0.226101	0.515916	-0.56057	0.515916	-1.64702
0.476458007		-0.35175	-1.00617	-0.16766	-1.64702	-0.56057	1.565276	-1.64702	2.448286	-0.16766	1.565276
-0.167657171		-0.38112	-1.03263	-0.35175	-0.35175	1.874921	-1.00617	-0.35175	0.226101	0.226101	-1.64702
-0.201743692		-0.38112	-1.00617	-0.56057	1.565276	0.476458	1.874921	1.874921	-0.38112	1.874921	1.874921
3.570413842		-1.64702	-0.35175	0.226101	-0.20174	-0.73981	0.515916	-0.56057	-0.19382	2.448286	0.18368
1.565275502		-1.24012	-1.24012	-0.56057	-1.64702	-0.16766	0.515916	-1.03263	-1.03263	-0.38112	-0.19382
2.448286293		-1.03263	-0.35175	0.476458	1.874921	-0.35175	-0.20174	-1.24012	-0.56057	-1.24012	-0.35175
0.226101071		0.515916	0.18368	-1.64702	-0.35175	0.476458	-0.19382	1.565276	-0.20174	0.226101	1.565276
1.874921215		0.18368	-0.38112	0.515916	-0.56057	-0.35175	1.565276	1.874921	-0.20174	3.570414	3.570414
	mean	-0.19644	-0.4921	-0.14923	0.125097	-0.00011	0.474364	-0.24763	0.133408	0.345504	0.383677
	variance	1.824229	0.81021	1.500299	1.472232	1.09492	1.423884	1.106669	1.521112	2.134019	1.8057

		71	72	73	74	75	76	77	78	79	80
		-1.24012	0.18368	-0.38112	-1.64702	0.18368	-0.73981	-0.73981	-1.23582	-0.20174	-1.64702
		-1.24012	0.226101	1.874921	1.874921	0.515916	3.570414	3.570414	-1.00617	-0.38112	-1.00617
		-0.20174	-1.03263	-0.56057	-1.03263	-0.19382	2.448286	-1.03263	2.448286	-0.56057	-0.19382
		-0.19382	-1.03263	-1.23582	-0.38112	-1.03263	-1.64702	0.226101	1.565276	3.570414	-0.56057
		0.226101	-0.16766	-0.20174	0.18368	-1.00617	1.565276	-0.16766	-1.64702	-0.56057	-1.03263
		-1.64702	-1.23582	1.874921	0.18368	1.874921	0.515916	0.476458	0.226101	2.448286	0.515916
		1.565276	1.565276	-1.03263	-0.19382	3.570414	-1.23582	-0.35175	-0.16766	1.874921	-0.35175
		-1.00617	-0.35175	2.448286	-0.38112	0.515916	-1.24012	-1.23582	-0.19382	-0.56057	0.18368
		0.18368	-1.03263	-1.23582	-0.35175	-0.38112	1.565276	-0.38112	-1.64702	-1.64702	-0.20174
		0.226101	0.515916	-0.16766	-0.56057	-1.24012	-0.35175	-1.23582	0.18368	1.874921	-1.00617
		1.565276	0.476458	0.226101	1.874921	-1.64702	-0.73981	-0.35175	-1.23582	-1.00617	-1.24012
		-0.38112	0.226101	-1.24012	-0.73981	0.476458	-1.64702	0.515916	1.874921	-1.23582	3.570414
		-1.03263	-1.00617	1.874921	-0.56057	-1.64702	-0.38112	-0.16766	-1.24012	-1.64702	-1.03263
		-1.24012	0.515916	-1.24012	-1.64702	-1.64702	3.570414	-1.64702	-0.73981	1.565276	1.565276
		-0.20174	1.874921	-0.35175	-0.38112	-0.38112	-0.19382	-0.19382	0.226101	0.18368	2.448286
		-1.64702	0.515916	-0.56057	0.226101	-1.24012	-1.03263	3.570414	0.515916	-1.24012	-1.00617
		0.515916	0.18368	-0.19382	-1.03263	-1.23582	0.18368	-1.00617	-0.38112	-0.19382	-1.23582
		0.476458	0.226101	1.565276	0.18368	0.18368	0.515916	2.448286	1.874921	-0.19382	-0.20174
		1.565276	3.570414	2.448286	-0.19382	2.448286	0.515916	-0.35175	-1.23582	2.448286	-1.00617
		-0.38112	0.515916	2.448286	-0.56057	-0.16766	-1.03263	2.448286	-0.73981	-1.64702	-1.64702
	mean	-0.20443	0.236856	0.317962	-0.25683	-0.10252	0.210477	0.219654	-0.12774	0.144519	-0.2543
	variance	1.035304	1.315486	1.958315	0.818233	2.002625	2.545293	2.424563	1.548085	2.486959	1.864642

		81	82	83	84	85	86	87	88	89	90
		-1.23582	0.18368	-0.38112	0.476458	-0.16766	-0.56057	0.226101	-0.19382	-1.03263	2.448286
		-0.16766	-1.64702	-0.20174	-0.19382	-1.64702	0.515916	1.565276	-0.16766	-1.03263	0.226101
		0.18368	2.448286	-1.24012	0.226101	-0.35175	-0.56057	-1.00617	0.226101	0.18368	0.476458
		-0.16766	3.570414	-1.23582	-1.24012	0.515916	-0.38112	-1.00617	-0.20174	-1.23582	0.18368
		-0.73981	-1.24012	-1.24012	-0.56057	-1.03263	0.476458	1.565276	-1.23582	-0.38112	0.18368
		0.476458	-1.23582	-0.16766	0.476458	1.565276	-0.73981	-0.16766	-0.19382	-1.64702	-0.38112
		1.874921	-0.35175	-0.35175	1.565276	-0.35175	-0.56057	-1.24012	-0.73981	1.874921	-0.20174
		0.515916	-1.00617	3.570414	0.476458	-0.73981	-0.35175	-0.19382	-0.19382	-0.16766	1.565276
		0.18368	-1.00617	2.448286	-0.73981	2.448286	-0.20174	-0.73981	0.18368	0.226101	-0.19382
		0.226101	-1.03263	0.476458	0.476458	0.18368	-0.35175	-0.38112	-1.03263	-1.64702	2.448286
		-1.24012	0.18368	-1.64702	0.18368	-1.24012	-1.24012	-0.35175	-0.38112	-0.73981	-1.24012
		0.476458	0.226101	-0.16766	-0.20174	-0.35175	-1.24012	-1.24012	-1.64702	-1.24012	-0.73981
		-0.73981	-1.00617	-0.16766	-1.64702	-0.38112	-0.19382	-1.64702	0.226101	0.476458	0.476458
		-1.00617	0.515916	-0.16766	-1.24012	1.565276	-0.38112	0.18368	-0.19382	-0.38112	1.565276
		-0.38112	-0.16766	-1.64702	-1.64702	-1.23582	-0.56057	1.565276	-1.03263	-1.24012	0.18368
		0.18368	1.565276	-0.19382	-0.56057	0.18368	-0.38112	2.448286	-0.73981	-0.16766	-0.19382
		-0.38112	-0.56057	-1.23582	-1.64702	2.448286	-1.64702	-0.35175	-0.16766	0.476458	-0.35175
		1.874921	2.448286	-0.38112	2.448286	0.515916	0.226101	-0.20174	-0.35175	-0.16766	-0.20174
		0.18368	-0.19382	0.226101	-0.35175	3.570414	-0.20174	-0.73981	0.226101	-0.20174	-0.38112
		0.515916	-1.03263	-0.16766	-0.73981	-1.23582	-0.16766	-0.20174	-0.35175	-1.64702	-1.03263
	mean	0.031806	0.033055	-0.19363	-0.22201	0.213074	-0.42514	-0.09575	-0.39814	-0.48458	0.241975
	variance	0.721145	2.052649	1.603104	1.13633	2.041648	0.281713	1.194397	0.269683	0.79971	1.055054
The Actual Within	**Bootstrap Sample**										
Differences (Seed Data)		**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
-1.23582145		0.18368	0.18368	1.565276	1.874921	-0.16766	0.476458	-0.35175	-1.03263	-0.20174	-0.56057
-1.647020556		-1.23582	-1.23582	-0.35175	0.226101	-0.73981	2.448286	2.448286	-0.35175	-1.64702	2.448286
-0.351750929		1.565276	-1.23582	-0.35175	-0.73981	0.515916	-1.64702	-0.19382	-0.35175	-0.35175	-0.35175
0.515916268		0.18368	0.515916	2.448286	0.226101	3.570414	1.565276	-1.23582	-1.23582	-0.35175	-0.38112
-0.560572586		-0.35175	-0.16766	-1.00617	-0.16766	-0.35175	-0.16766	-0.38112	-1.23582	-0.56057	-1.64702
0.183679795		-0.20174	-1.64702	-0.56057	-1.00617	0.18368	-0.38112	-0.56057	-0.38112	0.18368	-0.20174
-1.032627733		0.476458	-1.24012	3.570414	-0.16766	-1.23582	-0.38112	-0.19382	1.874921	2.448286	1.565276
-0.73981005		1.874921	-0.16766	-0.20174	0.226101	2.448286	-1.64702	1.565276	0.18368	-1.64702	-1.23582
-1.240118814		-1.03263	-0.73981	-1.03263	-1.24012	-0.56057	-1.00617	-0.56057	-0.73981	-1.03263	-0.35175
-0.381123119		-0.73981	0.515916	-0.56057	-1.24012	0.476458	-0.35175	-0.20174	-0.56057	-0.56057	-0.19382
-0.193823157		-0.56057	-0.73981	-1.03263	0.476458	-0.20174	-0.16766	-0.38112	-0.16766	-1.03263	-0.73981
-1.006171272		2.448286	-0.35175	-0.19382	3.570414	1.874921	3.570414	1.874921	-1.64702	-0.19382	-1.03263
0.476458007		-1.00617	-1.00617	-1.00617	3.570414	-0.38112	-1.64702	-0.38112	-0.56057	-0.56057	-0.73981
-0.167657171		1.874921	3.570414	-1.03263	-0.56057	-1.64702	0.515916	-1.24012	-0.56057	-0.19382	1.874921
-0.201743692		-0.20174	-0.73981	-1.64702	2.448286	-0.56057	0.18368	-0.19382	-0.35175	-0.19382	-0.35175
3.570413842		-0.35175	-0.20174	0.515916	0.476458	-0.19382	-0.35175	1.874921	-0.56057	0.18368	-0.35175
1.565275502		-1.24012	0.515916	-1.24012	-0.16766	-0.20174	-0.20174	-0.19382	-0.35175	-0.56057	-0.73981
2.448286293		1.565276	-1.00617	-1.03263	-0.16766	0.226101	-0.56057	-1.23582	-0.73981	-1.64702	-0.56057
0.226101071		-1.64702	0.476458	1.874921	-0.73981	-0.73981	3.570414	-0.16766	-1.64702	-1.64702	-0.35175
1.874921215		0.226101	-0.35175	3.570414	-0.73981	1.565276	0.18368	-0.56057	-1.64702	0.476458	-1.64702
	mean	0.091473	-0.25264	0.114751	0.307911	0.19398	0.200176	-0.01349	-0.60322	-0.45451	-0.2775
	variance	1.428955	1.255092	2.576467	2.098587	1.626946	2.305194	1.146574	0.60791	0.884113	1.134259
Mean of 100 Bootstrap Sample Means:	**0.0583**										
Mean Variance of 100 Bootstrap Samples:	**1.6355**										

APPENDIX D

The Actual Between Differences (Seed Data)		Bootstrap Sample 1	2	3	4	5	6	7	8	9	10
-2.575302308		0.096352	1.342703	-2.4944	1.075882	-1.20164	1.213169	-2.5753	0.731935	1.342703	0.436328
-2.498058383		0.393647	-2.4944	1.075882	1.342703	1.342703	-1.44098	1.075882	1.567686	-1.44098	-1.74614
-2.494399823		1.567686	0.436328	1.075882	0.096352	-0.7477	-2.4944	1.567686	1.567686	-1.33088	-2.4944
-1.746136787		-2.4944	-1.20164	-2.5753	1.075882	1.342703	-1.33088	-0.79181	1.213169	-1.74614	-1.44098
-1.473886444		-2.4944	0.393647	0.096352	-0.79181	-1.33088	-2.4944	-0.7477	-2.49806	1.928733	-1.74614
-1.440979236		-2.49806	-0.79181	-0.79181	-1.47389	-2.5753	-2.5753	0.436328	0.731935	-0.79181	-1.74614
-1.330881548		0.436328	-2.5753	-1.47389	-2.5753	-1.03727	1.075882	0.096352	1.213169	0.731935	1.075882
-1.201643376		0.436328	-2.4944	0.436328	-0.7477	-1.74614	0.436328	-1.20164	-2.4944	1.213169	0.393647
-1.037270045		1.213169	0.731935	-1.03727	-1.33088	0.436328	-2.5753	0.096352	0.393647	1.567686	0.393647
-0.791810326		0.731935	1.213169	1.075882	0.731935	-0.7477	1.928733	-1.03727	1.567686	1.213169	-0.79181
-0.74769637		-1.03727	-1.74614	1.567686	-1.33088	0.436328	-1.74614	-1.74614	-1.47389	0.393647	0.436328
0.096351785		1.075882	-2.49806	-1.03727	1.213169	0.096352	-2.5753	0.731935	-1.03727	-0.79181	-2.49806
0.393646966		-1.44098	-2.4944	0.096352	0.731935	-0.79181	1.342703	-1.20164	-1.44098	0.393647	0.436328
0.436328416		1.567686	-1.20164	-1.44098	0.393647	-1.33088	1.213169	1.928733	0.436328	1.928733	0.096352
0.731934905		-1.74614	-0.79181	1.928733	-1.03727	0.436328	-1.47389	-2.5753	1.075882	1.342703	1.075882
1.075882095		-1.20164	-0.7477	-1.44098	-2.49806	1.567686	1.342703	0.393647	-1.47389	1.928733	1.342703
1.213168948		-2.49806	1.075882	-1.20164	-1.74614	1.928733	1.928733	-1.20164	0.393647	1.342703	-2.49806
1.342703247		-1.74614	-1.74614	-1.44098	1.075882	-1.74614	-2.49806	-1.20164	1.928733	-2.4944	1.213169
1.567686138		1.213169	-0.79181	-1.47389	-1.03727	1.342703	-1.44098	0.393647	-1.44098	-1.20164	0.096352
1.928732533		-2.49806	-0.79181	1.213169	1.928733	-2.49806	0.096352	0.393647	1.928733	-0.79181	0.436328
	mean	-0.54615	-0.85867	-0.39211	-0.24515	-0.34118	-0.60339	-0.35829	0.144539	0.236904	-0.37644
	variance	2.420567	1.797805	1.889838	1.867109	1.92718	3.041639	1.596227	2.215986	2.007183	1.81045

		11	12	13	14	15	16	17	18	19	20
		-1.33088	1.075882	-0.79181	0.731935	1.213169	-1.20164	1.567686	1.928733	0.731935	0.731935
		-0.7477	0.393647	0.436328	-1.33088	0.731935	-1.74614	1.342703	1.567686	1.567686	1.928733
		-2.4944	-2.49806	0.436328	1.342703	-1.47389	0.436328	1.213169	1.567686	0.436328	-2.5753
		1.075882	-0.7477	-2.5753	-1.74614	-1.33088	1.075882	-1.47389	1.213169	1.567686	-2.4944
		0.393647	-1.47389	-2.4944	1.342703	0.096352	-1.03727	1.075882	-1.47389	-1.20164	-1.20164
		-2.4944	1.075882	-1.20164	0.436328	0.436328	-0.7477	0.393647	1.567686	0.731935	-1.03727
		-1.47389	-1.33088	-1.03727	-1.20164	1.928733	-1.33088	-0.7477	1.342703	0.731935	-1.47389
		-0.79181	0.096352	-2.5753	-1.74614	-2.49806	-1.47389	-1.03727	1.075882	-1.33088	-0.79181
		-2.5753	1.928733	-1.33088	-2.49806	1.075882	0.393647	1.567686	-2.49806	-1.47389	-1.44098
		-1.03727	0.096352	-2.49806	1.567686	1.928733	-1.44098	0.436328	1.342703	1.075882	-2.4944
		-1.47389	-1.47389	0.436328	0.393647	-1.74614	1.213169	-0.79181	-2.5753	1.342703	-1.74614
		-0.7477	0.731935	-1.20164	1.928733	-1.44098	-0.7477	1.567686	0.731935	1.075882	0.731935
		1.342703	0.731935	0.436328	-1.33088	1.567686	-0.79181	-2.5753	1.567686	1.342703	-1.03727
		-1.03727	1.342703	-1.20164	-2.49806	1.075882	-2.49806	-0.79181	-2.4944	-0.7477	0.393647
		1.213169	-1.47389	-1.74614	-1.47389	1.342703	-1.33088	-1.33088	-1.44098	-2.5753	-1.47389
		-1.33088	1.567686	0.096352	1.213169	1.928733	1.928733	-1.33088	-2.5753	1.342703	-1.47389
		0.393647	1.075882	1.342703	-1.74614	-2.49806	1.567686	1.342703	-1.20164	1.567686	-1.03727
		-2.49806	1.075882	1.342703	0.096352	-1.74614	0.393647	1.342703	-1.33088	1.213169	-1.74614
		1.213169	-1.44098	-1.44098	-1.33088	1.213169	-1.44098	-1.47389	1.213169	0.096352	1.342703
		-0.79181	1.075882	0.436328	0.731935	-1.47389	1.075882	-2.5753	-2.4944	0.436328	1.567686
	mean	-0.75965	0.091474	-0.75658	-0.35588	0.016564	-0.38515	-0.11393	-0.14829	0.396575	-0.76638
	variance	1.705265	1.684725	1.672453	2.142414	2.535787	1.627363	2.080893	3.198208	1.473624	1.922445

	21	22	23	24	25	26	27	28	29	30
	-1.33088	1.075882	-0.7477	0.731935	0.731935	1.928733	-1.44098	0.436328	1.928733	0.436328
	1.075882	-1.33088	-1.33088	0.436328	1.342703	-2.5753	0.436328	1.342703	1.342703	-2.5753
	1.075882	-1.20164	1.567686	-2.5753	0.393647	-0.79181	-2.5753	0.096352	-2.5753	-1.20164
	-0.7477	1.928733	1.075882	1.342703	-2.49806	-1.74614	0.096352	1.567686	1.567686	-0.7477
	-1.03727	1.213169	1.567686	0.436328	-0.7477	0.731935	-2.49806	-2.5753	-1.03727	0.731935
	0.096352	-1.47389	1.213169	-2.49806	-2.5753	1.342703	0.393647	-2.4944	-0.79181	1.342703
	1.928733	-1.03727	1.075882	-1.33088	-0.7477	1.342703	1.213169	0.096352	0.393647	-2.4944
	1.213169	-1.44098	-1.74614	1.567686	-1.33088	0.731935	1.213169	-1.20164	-1.74614	-0.79181
	0.731935	1.075882	-1.47389	0.436328	-1.03727	-2.5753	1.342703	0.731935	1.213169	-1.20164
	0.436328	0.731935	-1.74614	-2.5753	-1.33088	-1.03727	-1.20164	-2.4944	0.393647	-1.33088
	0.096352	-2.5753	-1.44098	1.928733	1.213169	1.928733	-2.5753	-1.47389	0.096352	-2.5753
	-1.47389	1.567686	-2.4944	-1.47389	1.213169	-1.33088	-2.49806	-1.74614	-1.03727	-2.49806
	0.096352	-1.20164	-1.33088	-2.4944	-1.33088	-2.49806	1.567686	1.213169	1.567686	1.075882
	-1.47389	0.731935	-1.44098	1.928733	0.393647	0.096352	1.213169	0.096352	0.436328	1.342703
	0.393647	-1.74614	0.436328	1.213169	1.075882	0.731935	1.075882	1.075882	1.567686	-1.47389
	0.393647	-1.03727	-1.47389	0.096352	-2.49806	1.928733	1.928733	-1.20164	-0.7477	-0.79181
	0.096352	-2.49806	-2.5753	0.436328	-2.49806	1.075882	-1.20164	0.731935	-0.7477	-1.33088
	0.393647	0.096352	1.567686	-0.7477	0.096352	0.731935	-2.5753	-1.33088	1.928733	-2.49806
	-2.5753	-2.49806	1.567686	-2.49806	-1.47389	1.213169	-2.5753	-1.74614	0.393647	1.342703
	-2.5753	1.342703	0.096352	-2.4944	-1.74614	0.096352	-1.74614	-1.20164	-0.79181	-1.03727
mean	-0.1593	-0.41384	-0.38164	-0.40667	-0.66772	0.066317	-0.52034	-0.50387	0.167751	-0.81382
variance	1.53909	2.244436	2.234491	2.83489	1.890745	2.394545	2.921865	1.923761	1.704966	1.973935

	31	32	33	34	35	36	37	38	39	40
	1.567686	-1.33088	0.096352	-0.7477	-1.33088	0.436328	-2.5753	0.096352	0.436328	0.731935
	1.213169	1.213169	1.928733	-1.20164	-1.74614	-2.49806	-1.47389	1.928733	1.342703	0.096352
	-1.47389	1.213169	1.075882	-1.03727	0.393647	-1.44098	1.928733	-1.47389	-1.03727	1.928733
	-2.4944	-1.20164	1.213169	1.928733	-1.74614	-1.74614	-1.03727	0.393647	1.075882	0.393647
	0.393647	0.393647	1.213169	0.436328	-0.79181	1.342703	-1.20164	1.213169	-1.20164	1.075882
	-1.44098	-0.79181	1.213169	1.075882	-1.33088	1.342703	-2.5753	-1.03727	1.075882	-0.79181
	1.567686	-1.03727	-2.5753	1.213169	-0.7477	0.436328	0.731935	1.928733	-1.20164	1.928733
	-1.20164	-0.7477	-2.4944	1.567686	1.342703	0.436328	-2.4944	1.342703	1.342703	-1.74614
	-1.33088	-1.03727	0.436328	-2.4944	0.096352	1.928733	-1.33088	0.096352	-0.79181	-1.44098
	-1.47389	-1.74614	0.731935	1.928733	-0.7477	1.928733	-1.33088	-1.74614	-0.79181	-1.47389
	1.075882	-0.79181	-1.44098	-2.4944	0.393647	1.075882	-2.4944	-2.49806	-1.74614	1.342703
	-2.49806	-1.47389	-1.03727	-1.03727	1.075882	1.928733	0.393647	-1.20164	-2.49806	-2.4944
	-1.03727	0.731935	-1.20164	0.393647	0.393647	1.567686	-1.47389	0.096352	0.731935	-1.74614
	1.075882	1.213169	-1.20164	-0.79181	-1.33088	-1.44098	1.928733	1.213169	-0.7477	0.436328
	1.075882	-1.74614	-1.20164	1.928733	0.731935	1.928733	0.436328	-0.79181	-2.4944	-2.49806
	0.436328	-1.47389	1.342703	-1.33088	-2.5753	-1.44098	1.213169	1.567686	-0.7477	1.567686
	1.213169	0.731935	1.075882	-1.20164	0.393647	-1.03727	0.096352	-0.7477	0.731935	1.213169
	-1.33088	1.213169	-1.20164	1.928733	-1.33088	1.567686	-1.33088	1.213169	1.213169	0.096352
	1.928733	0.436328	1.567686	1.342703	-2.49806	-0.79181	1.075882	-1.20164	-2.49806	-1.03727
	-2.5753	-2.49806	0.731935	-0.79181	-0.7477	-2.4944	0.731935	-2.49806	-1.20164	-2.49806
mean	-0.26546	-0.4365	0.013621	0.030776	-0.60513	0.151498	-0.5391	-0.10531	-0.45037	-0.24576
variance	2.398179	1.439805	1.987402	2.271803	1.32427	2.532323	2.293133	2.048875	1.796273	2.356513

		41	42	43	44	45	46	47	48	49	50
		-1.33088	-1.47389	-2.49806	-1.03727	-1.74614	-2.49806	-2.49806	0.731935	-0.7477	-2.4944
		-1.33088	1.342703	-2.49806	-0.7477	-2.5753	0.436328	0.731935	-2.4944	0.393647	-1.20164
		0.731935	-1.20164	0.393647	-0.79181	0.096352	-0.79181	1.342703	-1.33088	1.213169	-2.49806
		1.213169	-1.44098	-0.7477	1.928733	-1.33088	-2.5753	-0.7477	-1.20164	1.567686	1.342703
		0.436328	0.096352	-2.4944	0.393647	1.928733	-1.44098	-0.79181	-1.20164	-1.74614	0.393647
		-1.47389	-0.79181	1.213169	0.436328	-2.49806	-2.49806	0.096352	1.567686	0.393647	-0.79181
		0.096352	1.567686	-1.03727	-1.03727	-1.33088	1.342703	-1.33088	-2.4944	-2.5753	1.075882
		-0.79181	-2.49806	-0.7477	-1.33088	-1.03727	-1.47389	1.567686	-2.5753	-0.7477	-2.5753
		-1.47389	1.567686	-1.20164	-1.74614	0.436328	1.567686	-1.74614	-0.79181	-1.20164	-1.33088
		0.096352	1.342703	-1.20164	1.213169	0.731935	0.393647	-0.79181	-1.47389	-1.74614	-2.49806
		-1.47389	-2.4944	1.928733	0.436328	-1.47389	-2.4944	-1.03727	-1.03727	1.342703	-2.4944
		-0.79181	1.075882	1.342703	-1.74614	0.731935	1.342703	-1.74614	0.436328	-0.79181	-2.49806
		1.928733	0.731935	-1.44098	-2.5753	-2.4944	1.567686	-0.7477	-1.47389	1.213169	0.436328
		0.393647	-2.5753	-1.47389	0.096352	0.096352	0.436328	1.567686	-1.33088	-2.49806	-2.5753
		-1.44098	1.567686	-0.7477	-2.49806	-1.74614	-1.47389	1.928733	-1.20164	1.213169	-1.44098
		0.731935	0.436328	-1.03727	0.393647	-1.44098	0.731935	-1.20164	1.075882	-2.49806	-2.5753
		1.567686	-1.03727	-1.44098	0.436328	-1.74614	0.731935	1.075882	0.436328	-1.03727	1.342703
		-0.7477	-2.4944	-1.74614	0.096352	1.342703	-1.47389	0.393647	-0.7477	1.075882	-2.4944
		-1.33088	1.567686	1.567686	1.075882	1.928733	-1.33088	0.393647	1.213169	-0.79181	-1.44098
		-0.79181	-2.4944	1.075882	-0.79181	0.096352	1.928733	0.436328	0.096352	-1.33088	-1.74614
	mean	-0.28911	-0.36028	-0.63958	-0.38978	-0.60153	-0.37857	-0.15523	-0.68988	-0.46497	-1.30322
	variance	1.250536	2.719336	1.967222	1.521943	2.126548	2.489909	1.640026	1.581639	1.983853	2.07728

The Actual Between Differences (Seed Data)		51	52	53	54	55	56	57	58	59	60
		0.393647	-1.33088	0.436328	-2.49806	-0.79181	-1.44098	-1.20164	-0.79181	-2.49806	0.731935
-1.746136787		-1.74614	-1.20164	1.213169	0.436328	-1.20164	-0.7477	-2.5753	0.436328	-2.4944	0.731935
-2.498058383		1.213169	0.436328	-0.7477	-1.20164	-1.44098	-1.74614	-1.47389	-1.44098	-2.4944	0.436328
0.096351785		-0.7477	-1.20164	-0.79181	0.096352	-0.79181	1.213169	-1.74614	-2.49806	0.436328	1.567686
-2.494399823		-2.4944	-1.33088	1.075882	1.928733	-1.47389	0.731935	0.096352	-1.47389	0.096352	-0.79181
-0.791810326		1.075882	-1.20164	1.567686	0.436328	-0.79181	-2.4944	-1.20164	1.928733	-2.5753	0.393647
-1.330881548		-2.5753	-2.5753	-0.79181	-2.4944	0.731935	-1.44098	0.096352	-2.49806	0.096352	-0.79181
1.342703247		0.436328	-1.33088	1.928733	1.075882	1.928733	1.342703	-0.7477	-1.44098	-1.33088	-1.33088
-1.201643376		1.213169	-1.47389	0.393647	-0.79181	-0.79181	-1.03727	1.928733	-0.79181	1.213169	1.213169
1.567686138		-0.7477	1.928733	-0.7477	-1.44098	-1.74614	0.393647	-0.7477	-1.47389	1.213169	-1.47389
-1.473886444		-2.5753	1.928733	0.436328	-1.33088	-1.44098	1.213169	1.342703	-2.4944	1.213169	-1.20164
-2.575302308		1.075882	0.731935	-1.33088	0.393647	-1.33088	1.928733	1.075882	-1.20164	-1.47389	-0.7477
1.213168948		-2.5753	-2.49806	0.731935	0.731935	-1.20164	-1.47389	1.567686	-1.44098	-1.20164	0.731935
1.075882095		1.213169	-1.33088	0.731935	-1.33088	-2.49806	-2.49806	-1.33088	-1.20164	-0.79181	-1.44098
-1.440979236		-1.20164	-1.44098	-1.33088	-2.4944	-0.7477	-2.49806	-1.74614	-1.47389	-1.03727	-2.4944
-1.037270045		-1.47389	-2.4944	0.393647	-0.79181	1.075882	-0.7477	1.928733	-2.5753	-1.47389	-1.20164
0.436328416		1.928733	1.342703	1.075882	-1.33088	-1.03727	-1.33088	-1.74614	-2.5753	1.075882	-2.49806
-0.74769637		-1.33088	1.075882	0.393647	-0.79181	-1.74614	0.096352	-1.03727	-0.7477	0.436328	-1.20164
1.928732533		-1.33088	0.731935	1.213169	0.393647	0.393647	-2.4944	1.928733	1.342703	-1.47389	-0.79181
0.731934905		-1.03727	0.436328	0.096352	0.096352	1.075882	-1.47389	0.393647	0.436328	0.731935	-2.49806
0.393646966											
	mean	-0.56432	-0.53993	0.297378	-0.54542	-0.69132	-0.72523	-0.25978	-1.09881	-0.61664	-0.63288
	variance	2.260366	2.146438	0.921499	1.556434	1.296453	2.057033	2.116133	1.640528	1.876565	1.545553

		61	62	63	64	65	66	67	68	69	70
		-0.7477	1.075882	-0.79181	-1.33088	1.075882	1.213169	-2.4944	-2.4944	-2.49806	0.731935
		-0.79181	1.075882	-0.7477	-2.49806	0.436328	-1.44098	0.096352	-0.79181	-1.74614	-1.33088
		0.393647	-1.44098	-1.47389	1.213169	-0.7477	-1.33088	0.436328	-2.49806	-1.33088	1.075882
		0.393647	0.731935	1.075882	1.928733	-2.49806	0.436328	1.342703	-1.74614	0.393647	-1.20164
		-1.20164	-0.7477	1.928733	-1.47389	-0.79181	-0.7477	-2.49806	1.342703	-1.47389	-1.03727
		0.096352	-2.4944	0.436328	1.342703	1.567686	0.731935	0.393647	0.393647	-2.5753	0.436328
		-1.47389	0.436328	-2.5753	0.731935	-1.47389	-0.7477	1.928733	1.342703	1.928733	-2.5753
		0.731935	-1.44098	-2.5753	-1.33088	-1.20164	1.928733	1.567686	-2.4944	0.393647	1.342703
		0.096352	-1.44098	-0.7477	1.567686	0.731935	-0.7477	-1.47389	1.928733	-1.03727	-1.74614
		1.075882	-2.4944	1.213169	-1.03727	1.928733	1.342703	1.928733	0.393647	-0.79181	0.436328
		-2.4944	1.928733	1.075882	1.342703	0.393647	-1.33088	-2.49806	-1.74614	1.928733	-1.47389
		-1.20164	-0.7477	0.096352	-1.44098	-1.33088	-1.74614	1.075882	0.436328	0.393647	-1.20164
		-2.49806	1.075882	1.342703	0.731935	-1.03727	-1.44098	1.075882	-0.7477	-0.7477	0.096352
		0.393647	-2.5753	0.096352	-1.20164	1.075882	0.436328	0.731935	-2.5753	-0.7477	-1.03727
		1.342703	-2.4944	-1.03727	-2.4944	-1.03727	1.075882	-1.44098	-2.49806	1.075882	-1.20164
		-0.7477	0.731935	-1.44098	0.436328	0.731935	-1.33088	1.567686	-2.49806	1.213169	-2.4944
		0.393647	-2.4944	0.731935	1.567686	-0.7477	1.342703	1.567686	1.213169	-2.4944	-1.03727
		-0.7477	-1.44098	0.731935	-2.4944	-1.47389	-2.5753	-1.20164	-0.79181	-2.4944	0.393647
		-1.74614	1.928733	-1.44098	-1.20164	-1.20164	-1.33088	-1.74614	-1.33088	1.928733	1.075882
		-1.33088	0.436328	-1.03727	-1.74614	-1.03727	-2.49806	-1.47389	1.342703	-2.4944	0.731935
	mean	-0.50319	-0.51953	-0.25695	-0.36937	-0.33185	-0.43801	-0.05569	-0.69096	-0.55879	-0.50082
	variance	1.248288	2.521616	1.724007	2.407075	1.469683	1.887938	2.598728	2.58061	2.597972	1.480232
		71	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
		0.096352	-0.79181	1.342703	-1.20164	-1.33088	1.928733	-0.79181	-2.5753	-0.7477	1.213169
		0.096352	-1.03727	0.096352	0.096352	1.342703	-2.49806	-1.44098	0.436328	0.096352	1.342703
		1.213169	-1.33088	0.096352	-1.47389	1.342703	-2.4944	0.436328	-2.4944	-2.49806	-1.20164
		-1.03727	-0.7477	1.342703	-2.5753	0.436328	-0.79181	0.436328	-2.5753	-2.49806	-2.4944
		-1.33088	-0.79181	0.393647	-2.5753	0.731935	-2.5753	-1.44098	0.436328	1.928733	-0.79181
		1.342703	-2.4944	-1.74614	1.342703	0.731935	-1.20164	-0.7477	-0.7477	0.096352	0.731935
		-1.47389	1.213169	-0.7477	-0.7477	-1.74614	0.096352	1.928733	-1.47389	1.342703	1.567686
		-0.79181	-2.49806	-1.44098	-1.20164	-2.4944	-0.7477	-2.4944	0.436328	1.075882	-1.44098
		1.213169	0.436328	0.436328	0.393647	-1.47389	-1.33088	1.342703	-2.5753	1.567686	-2.5753
		-1.03727	-1.44098	-1.03727	-1.74614	-2.49806	1.075882	-0.7477	-1.47389	0.393647	-2.4944
		1.075882	-1.47389	-2.4944	-2.4944	-1.44098	-2.5753	-1.74614	0.436328	0.096352	1.075882
		1.075882	-2.5753	0.393647	1.567686	0.096352	1.567686	-1.33088	-2.5753	0.436328	-2.5753
		-1.74614	0.393647	-1.47389	-0.79181	-1.33088	-1.47389	0.731935	-2.5753	0.436328	-1.03727
		-0.79181	0.436328	-1.74614	1.567686	1.075882	0.096352	1.928733	-1.20164	-2.4944	1.342703
		-0.7477	0.096352	-2.5753	1.342703	-1.44098	-1.74614	-1.33088	1.928733	1.342703	-1.74614
		-0.7477	0.436328	-2.5753	-1.03727	0.096352	1.342703	-0.7477	-1.47389	0.393647	-2.5753
		-2.49806	1.213169	1.342703	1.567686	-1.44098	0.096352	-1.33088	0.731935	0.096352	-1.20164
		1.075882	1.213169	0.731935	1.213169	-2.49806	1.567686	0.096352	-2.49806	1.342703	-1.33088
		-1.20164	0.436328	-1.44098	-2.49806	-1.33088	-0.79181	-1.44098	0.436328	1.928733	-1.44098
		-2.49806	-1.33088	-1.47389	1.928733	-1.20164	0.393647	-2.4944	0.096352	-1.33088	-2.49806
	mean	-0.43564	-0.53191	-0.62878	-0.36614	-0.71868	-0.50308	-0.55922	-0.96507	0.15027	-0.9065
	variance	1.572783	1.550382	1.803829	2.618492	1.717082	2.246997	1.750231	2.143851	1.988045	2.365171

		81	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**
		0.731935	1.213169	1.213169	1.213169	1.075882	-2.5753	1.342703	-2.4944	1.075882	-1.03727
		1.213169	0.393647	-2.5753	0.436328	-0.79181	-1.03727	-1.44098	-1.74614	0.436328	1.342703
		1.567686	0.393647	-2.5753	-1.20164	-1.20164	-2.4944	-2.4944	-1.74614	-1.20164	0.731935
		-1.74614	1.213169	-1.03727	1.213169	-1.03727	1.213169	0.436328	-1.20164	0.393647	0.393647
		-0.79181	1.342703	0.096352	-0.79181	0.731935	-1.74614	-2.5753	-1.20164	-1.20164	-2.4944
		-1.33088	-0.7477	1.213169	0.096352	-0.7477	-2.5753	-0.79181	1.928733	-1.20164	0.096352
		-2.4944	-2.49806	1.342703	-1.74614	-1.74614	-1.47389	-1.20164	1.342703	-1.33088	1.213169
		1.567686	1.928733	0.731935	0.393647	-2.49806	0.436328	0.731935	1.075882	0.393647	0.436328
		1.213169	1.342703	0.731935	1.928733	-1.44098	-1.44098	-2.4944	1.928733	-2.4944	-0.7477
		1.213169	1.567686	-2.49806	-1.03727	0.436328	1.213169	-2.5753	-1.03727	0.731935	-1.44098
		1.928733	-1.33088	0.096352	-1.33088	1.075882	1.342703	-2.5753	1.075882	-1.44098	0.096352
		-1.33088	-0.79181	-2.4944	0.436328	1.567686	1.213169	0.096352	1.075882	0.393647	1.928733
		-2.5753	-1.47389	-1.74614	-2.4944	-2.49806	-0.79181	-0.79181	-2.5753	-0.7477	-1.20164
		-1.47389	0.731935	-1.03727	-0.7477	1.075882	1.567686	-0.7477	0.436328	-1.20164	-1.44098
		1.928733	0.436328	1.213169	-2.49806	-2.49806	1.928733	-1.44098	-1.47389	-0.79181	-1.03727
		1.075882	-0.7477	-0.79181	-2.49806	-1.20164	1.075882	-1.44098	-0.7477	0.393647	-1.74614
		-0.79181	-2.5753	-2.5753	-1.74614	1.928733	1.928733	0.436328	1.075882	0.096352	-2.4944
		0.096352	0.393647	-0.7477	-0.7477	0.096352	-1.74614	-0.7477	-1.44098	-1.74614	-1.33088
		1.928733	-0.7477	1.928733	-1.33088	-0.7477	1.567686	-1.74614	-1.33088	-1.33088	-2.4944
		1.928733	0.731935	1.928733	-0.7477	1.342703	1.075882	-1.03727	-1.47389	-1.44098	0.731935
	mean	0.192943	0.038814	-0.37912	-0.66003	-0.35388	-0.0659	-1.0529	-0.42649	-0.61076	-0.52475
	variance	2.528453	1.765456	2.664179	1.666464	2.06521	2.764636	1.424595	2.215414	0.998962	1.827204
		91	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
		0.393647	0.393647	-0.7477	-2.5753	-2.5753	0.393647	0.436328	-1.20164	-1.20164	0.731935
		1.342703	0.393647	0.731935	-1.44098	-0.79181	1.928733	1.342703	-1.20164	-2.5753	-0.79181
		-1.47389	-2.4944	-1.47389	1.928733	0.096352	1.075882	1.075882	-2.5753	-2.49806	-2.49806
		1.567686	1.567686	-1.20164	-2.5753	-0.79181	-1.44098	1.567686	1.075882	0.436328	-0.7477
		-2.4944	-1.20164	-1.33088	1.928733	-2.4944	-0.79181	-1.44098	-1.47389	-2.4944	-2.4944
		-0.7477	0.393647	-2.4944	0.436328	-1.74614	-1.47389	0.096352	-1.20164	-1.44098	-1.74614
		1.075882	0.731935	-1.03727	-2.5753	-1.20164	-1.47389	-1.74614	-2.49806	1.928733	1.213169
		-1.74614	-1.74614	1.928733	-1.20164	-1.33088	0.096352	0.393647	0.393647	0.096352	1.213169
		-1.33088	1.213169	-1.44098	-0.7477	0.393647	-2.49806	0.096352	0.393647	0.731935	-2.5753
		1.567686	-0.79181	0.096352	-1.44098	-1.33088	1.213169	-1.03727	0.436328	1.928733	0.436328
		-1.20164	-1.20164	-1.74614	-2.49806	-0.7477	1.928733	1.928733	1.928733	1.213169	-1.33088
		0.436328	1.567686	0.731935	1.075882	0.436328	1.075882	-1.44098	-2.4944	-1.44098	1.567686
		-1.74614	1.075882	0.731935	-1.44098	-2.4944	1.567686	-2.49806	1.342703	1.075882	1.213169
		0.096352	-1.03727	-1.20164	-1.33088	-0.7477	-1.33088	-1.47389	-1.20164	-1.74614	1.213169
		-2.49806	-1.47389	-0.79181	1.567686	-2.5753	-2.4944	-2.4944	-1.47389	1.928733	1.928733
		-0.79181	1.928733	-2.5753	1.075882	1.928733	-1.44098	1.342703	-1.47389	0.096352	-1.44098
		1.213169	-2.4944	-1.74614	-1.03727	-2.4944	-1.44098	-1.20164	-0.79181	-1.74614	-1.03727
		1.075882	0.096352	-2.5753	1.213169	1.075882	-1.44098	-1.20164	1.928733	-1.44098	0.731935
		-1.20164	1.342703	1.928733	-1.03727	-1.47389	1.567686	-1.44098	1.075882	-2.5753	-1.03727
		1.213169	1.567686	0.436328	1.075882	-2.49806	1.567686	1.928733	-1.33088	1.928733	-1.74614
	mean	-0.26249	-0.00842	-0.68886	-0.47997	-1.06817	-0.17057	-0.28834	-0.51716	-0.38975	-0.35983
	variance	1.975324	2.041565	1.921612	2.564063	1.745423	2.404896	2.170458	2.131301	2.879675	2.269213
Mean of 100 Bootstrap Sample Means:	**-0.40621**										
Mean Variance of 100 Bootstrap Samples:	**2.018009**										