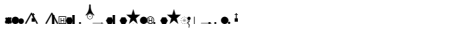
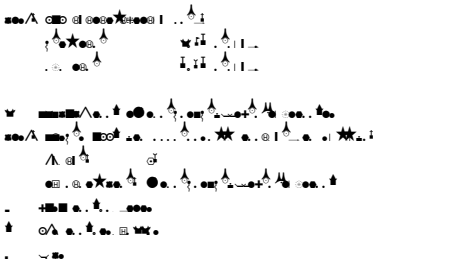
CODE

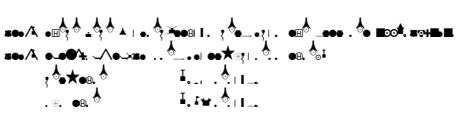
```
LIBNAME ass3 'C:\Users\BrewJR\Desktop\ass3';
DATA ass3.mydata;
SET ass3.afghm114;
RUN;

%let dat=ass3.mydata;
/*ods pdf file = "C:\Users\BrewJR\Desktop\ass3\ass3.pdf" notoc;*/
proc print data=&dat (obs=7);
run;

/* Correlation coefficient between sysbp and age*/
ods graphics on;
proc corr data=&dat;
var sysbp age;
run;
ods graphics off;

/* simple linear regression where y=sysbp and x=age*/
ods graphics on;
proc reg data=&dat;
model sysbp=age;
run;
ods graphics off;

/* ANOVA table*/
ods graphics on;
proc anova data=&dat;
model sysbp=age;
run;
ods graphics off;

/* anova sbp by age */
ods graphics on;
proc glm data=&dat;
model sysbp=age;
run;
ods graphics off;

/* analysis of residuals*/
ods graphics on;
proc reg data=&dat;
model sysbp=age;
output out= myresids residual=r predicted=fv;
run;
quit;
ods graphics off;

/*get CI */
ods graphics on;
proc reg data=&dat;
model sysbp=age/clb;
run;
ods graphics off;
```

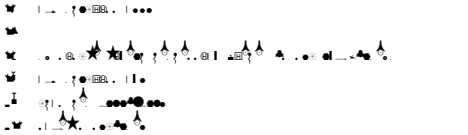
```
/* third bullet point - histogram of residuals */
ods graphics on;
proc univariate data=myresids;
var r;
histogram;
run;
ods graphics off;

/* third bullet point - qqplot of residuals */
ods graphics on;
proc univariate data=myresids;
var r;
qqplot;
run;
ods graphics off;


/* lots for y=sysbp and x=age*/
ods graphics on / height = 3in width=4in;
proc reg data=&dat plots(unpack)=all;
model sysbp=age/clb;
output out=data2 p=yhat r=resid lclm=lclm uclm=uclm lcl=llclp ucl=uclp;
run;
quit;
ods graphics off;

/* lots for y=lnsbp and x=age*/
ods graphics on / height = 3in width=4in;
proc reg data=&dat plots(unpack)=all;
model lnsbp=age/clb;
output out=data2 p=yhat r=resid lclm=lclm uclm=uclm lcl=llclp ucl=uclp;
run;
quit;
ods graphics off;




/*ods pdf close;*/
```

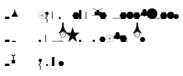
LOG

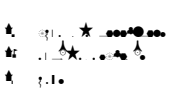


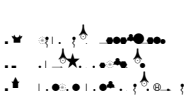


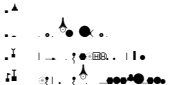


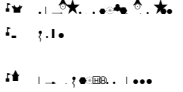


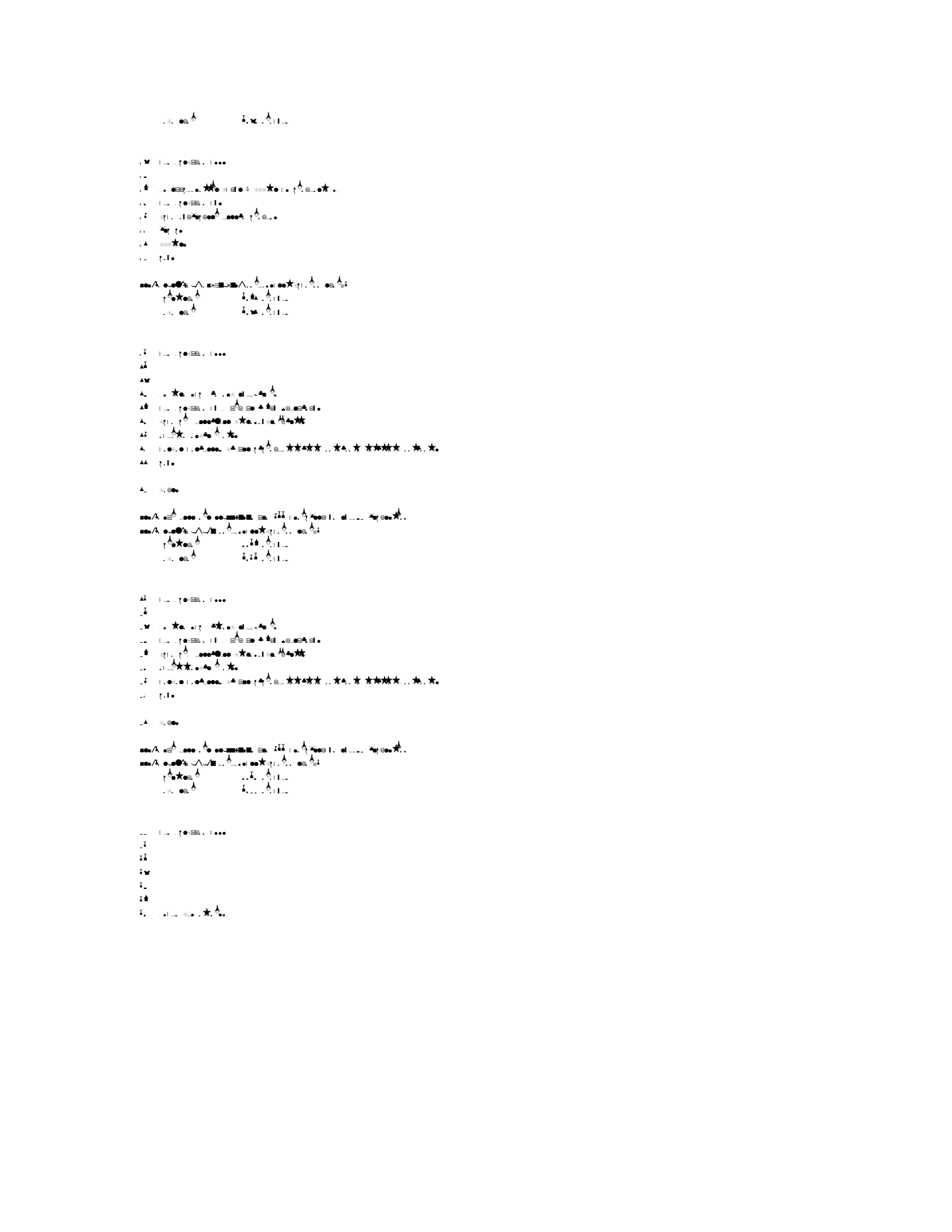












Obs	SEX	RANDID	TOTCHOL	AGE	SYSBP	DIABP	CURSMOKE	CIGPDAY	BMI
1	1	14367	280	64	168	100	0	0	25.72
2	1	33077	215	60	144.5	80	1	10	22.96
3	2	66472	249	72	157	87	0	0	29.55
4	1	98536	241	58	135	70	1	30	25.68
5	2	134914	180	52	195	107	1	40	22.36
6	2	168256	272	64	116	66	0	0	23.18
7	2	199229	214	64	130	74	1	20	26.21

Obs	DIABETES	BPMEDS	HEARTRTE	GLUCOSE	PREVCHD	PREVAP	PREVMI
1	0	0	92	82	0	0	0
2	0	0	57	91	0	0	0
3	1	0	65	73	0	0	0
4	0	0	90	93	0	0	0
5	0	1	68	75	1	1	0
6	0	0	77	74	0	0	0
7	0	0	75	85	0	0	0

Obs	PREVSTRK	PREVHYP	PERIOD	HDLC	LDLC	LNSBP
1	0	1	3	44	236	5.12396
2	0	1	3	62	135	4.97328
3	0	1	3	78	171	5.05625
4	0	0	3	41	200	4.90527
5	0	1	3	60	120	5.27300
6	0	0	3	41	231	4.75359
7	0	0	3	54	160	4.86753

The CORR Procedure

2 Variables:	SYSBP AGE

Simple Statistics							
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**	**Label**
SYSBP	500	140.40900	23.24189	70205	86.00000	246.00000	Systolic BP mmHg
AGE	500	60.85600	8.12523	30428	47.00000	78.00000	Age (years) at examination

Pearson Correlation Coefficients, N = 500 Prob > |r| under H0: Rho=0		
	SYSBP	**AGE**
SYSBP Systolic BP mmHg	1.00000	0.35172 <.0001
AGE Age (years) at examination	0.35172 <.0001	1.00000

The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

Number of Observations Read	500
Number of Observations Used	500

Analysis of Variance

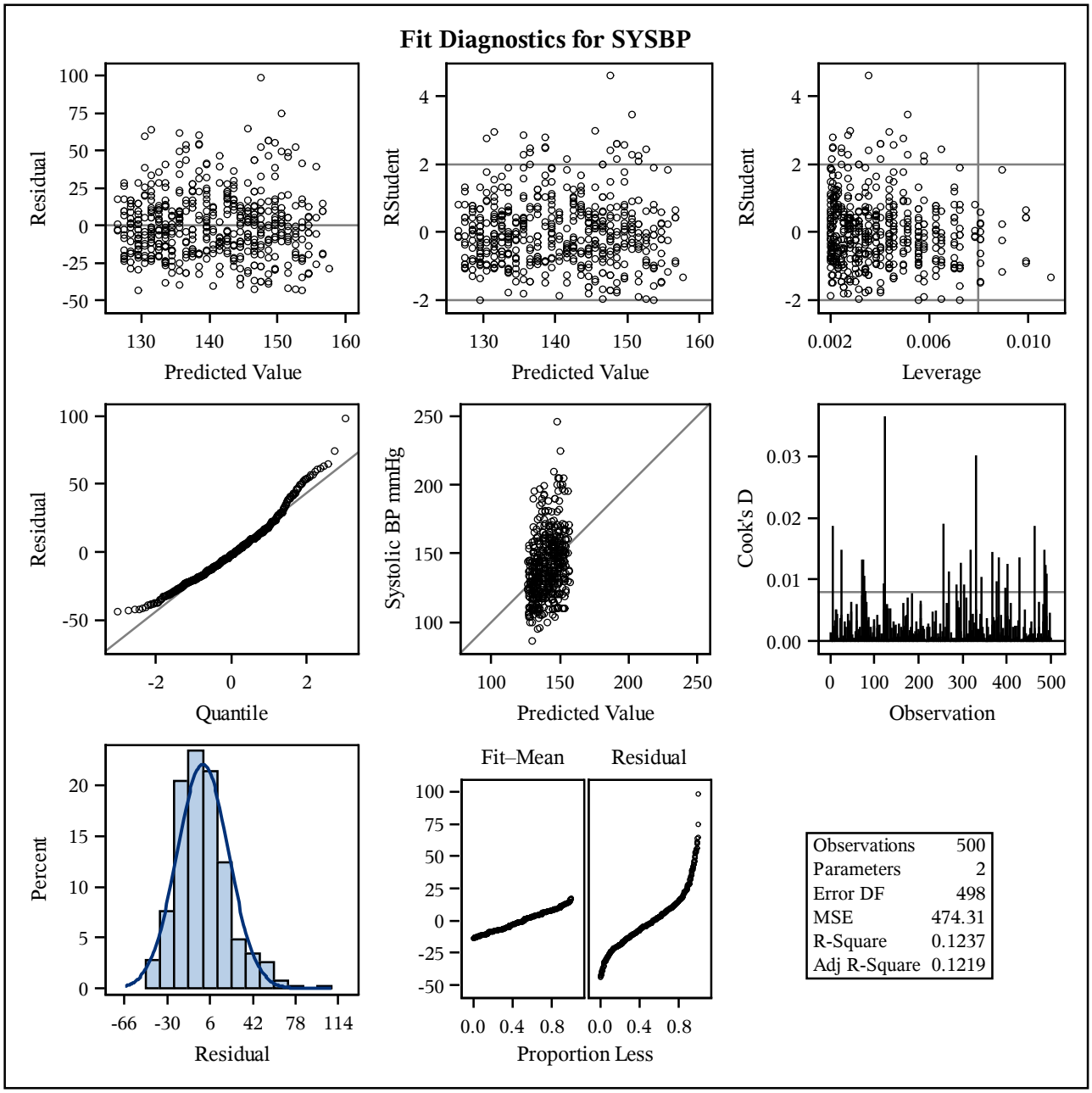
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	33345	33345	70.30	<.0001
Error	498	236207	474.31150		
Corrected Total	499	269553			

Root MSE	21.77869	**R-Square**	0.1237
Dependent Mean	140.40900	**Adj R-Sq**	0.1219
Coeff Var	15.51090		

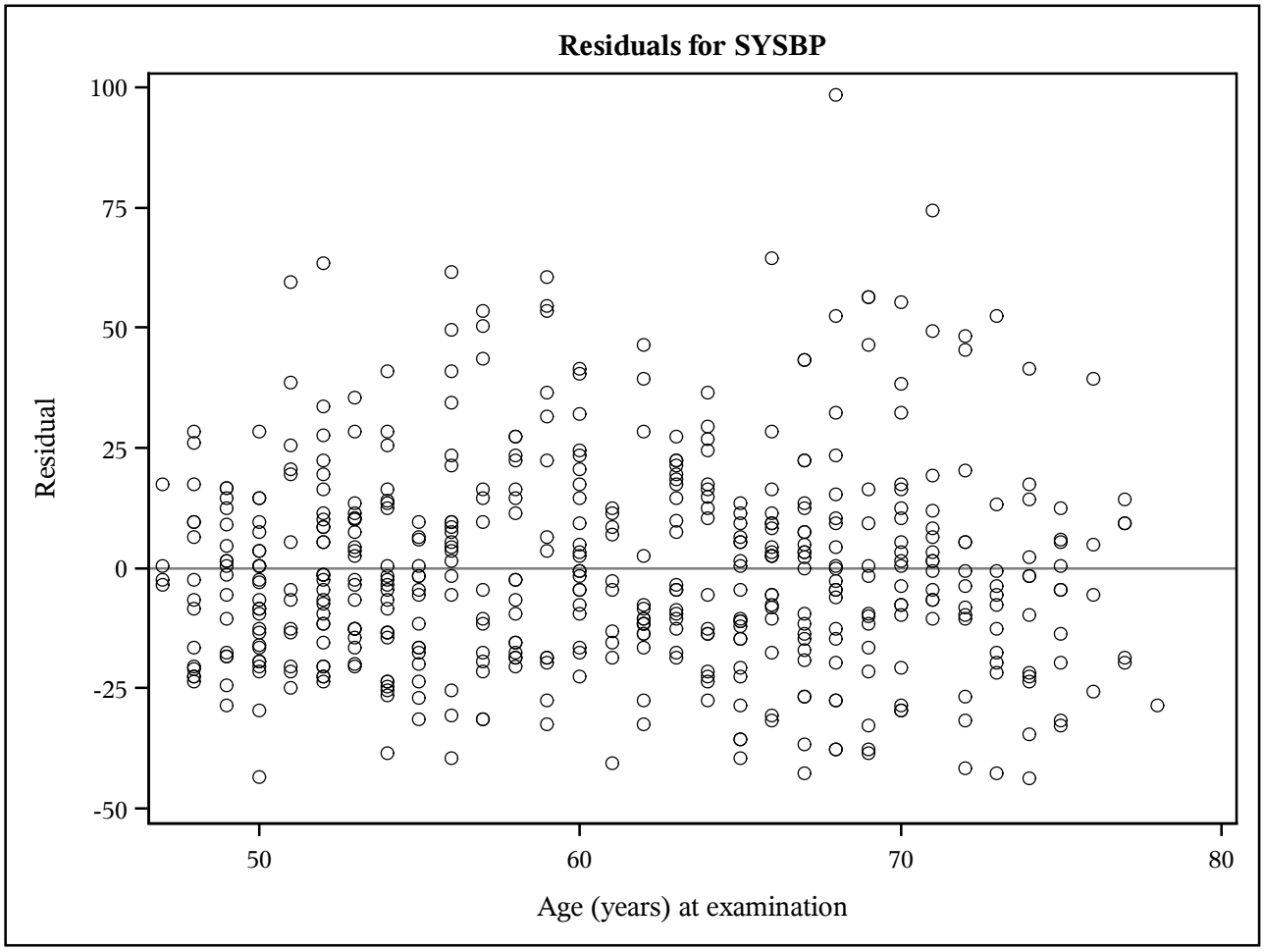
Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	79.18296	7.36680	10.75	<.0001
AGE	Age (years) at examination	1	1.00608	0.11999	8.38	<.0001

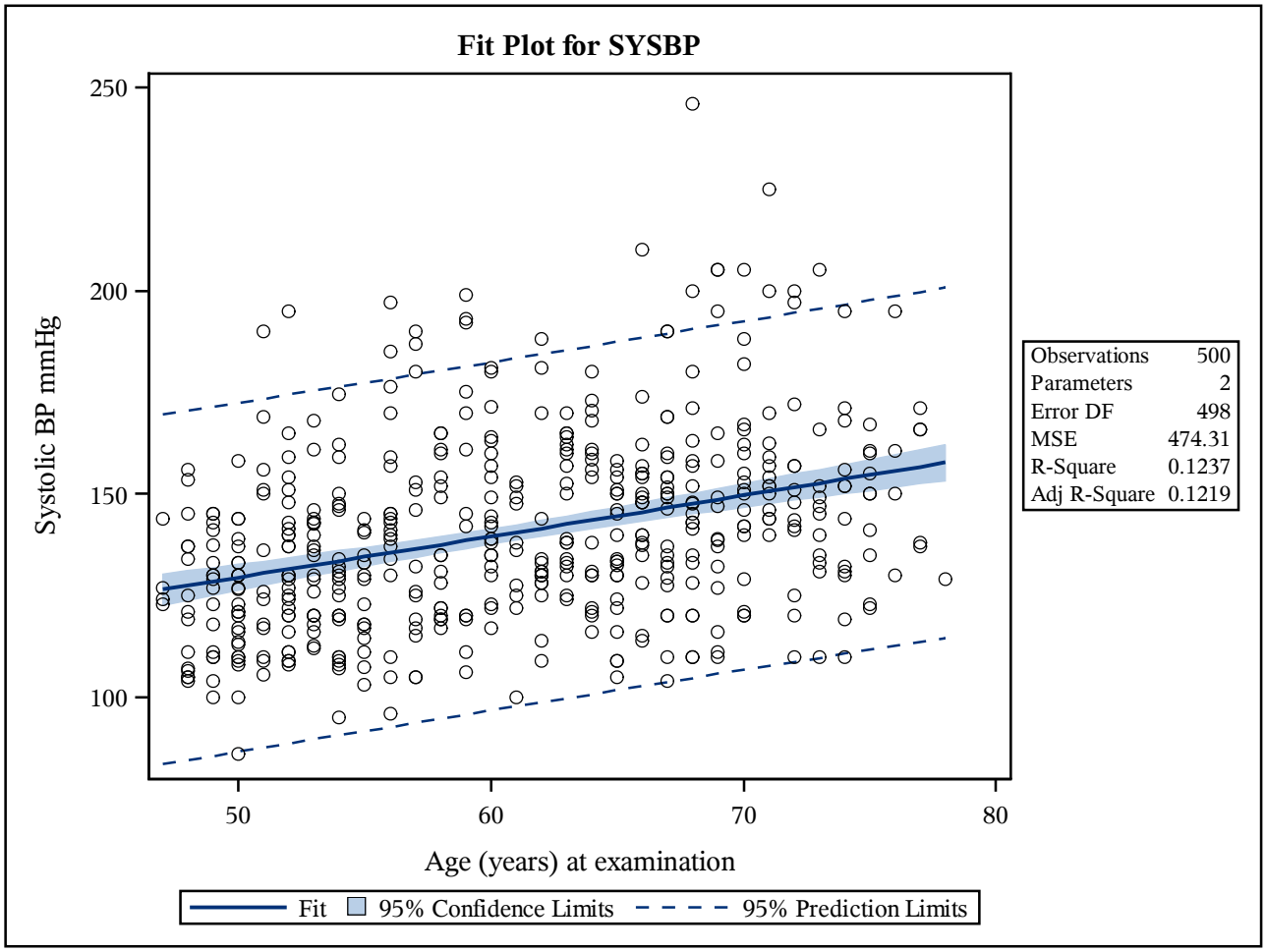
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The GLM Procedure

Number of Observations Read	500
Number of Observations Used	500

The GLM Procedure

Dependent Variable: SYSBP Systolic BP mmHg

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	33345.4820	33345.4820	70.30	<.0001
Error	498	236207.1275	474.3115		
Corrected Total	499	269552.6095			

R-Square	Coeff Var	Root MSE	SYSBP Mean
0.123707	15.51090	21.77869	140.4090

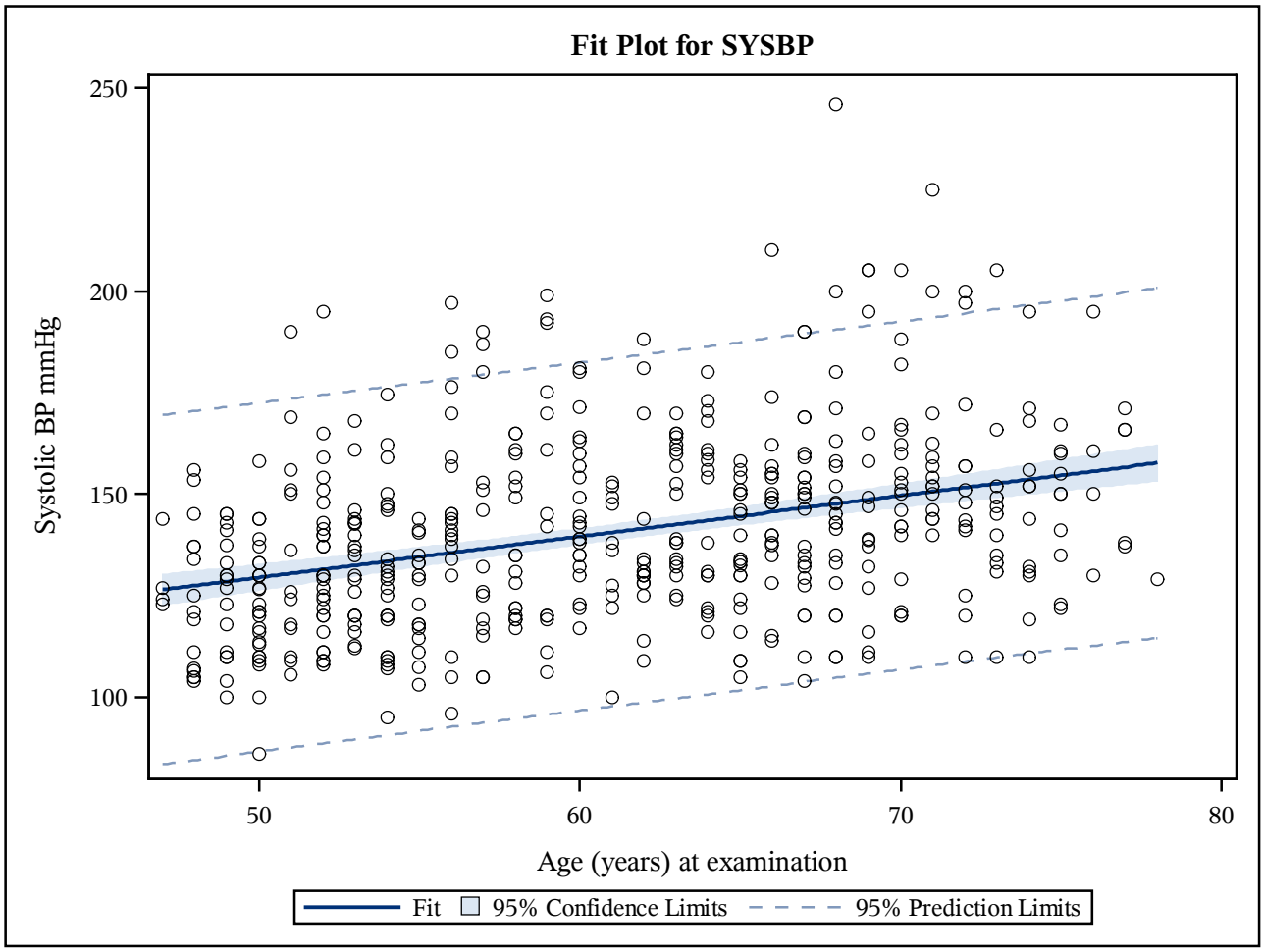
Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	1	33345.48204	33345.48204	70.30	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	1	33345.48204	33345.48204	70.30	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	79.18296094	7.36679773	10.75	<.0001
AGE	1.00608057	0.11999029	8.38	<.0001

The GLM Procedure

Dependent Variable: SYSBP Systolic BP mmHg



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

Number of Observations Read	500
Number of Observations Used	500

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	33345	33345	70.30	<.0001
Error	498	236207	474.31150		
Corrected Total	499	269553			

Root MSE	21.77869	**R-Square**	0.1237
Dependent Mean	140.40900	**Adj R-Sq**	0.1219
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Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
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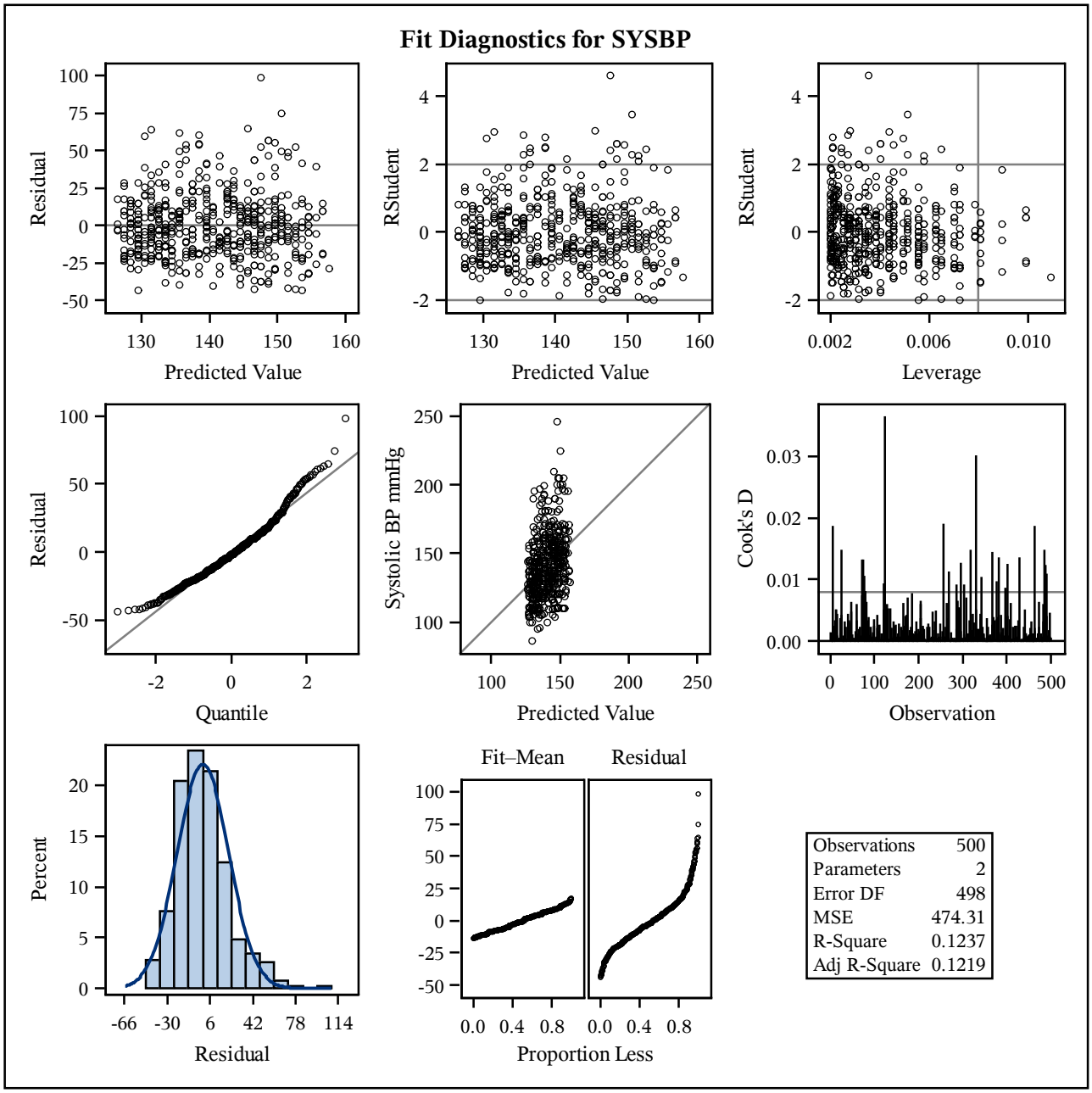
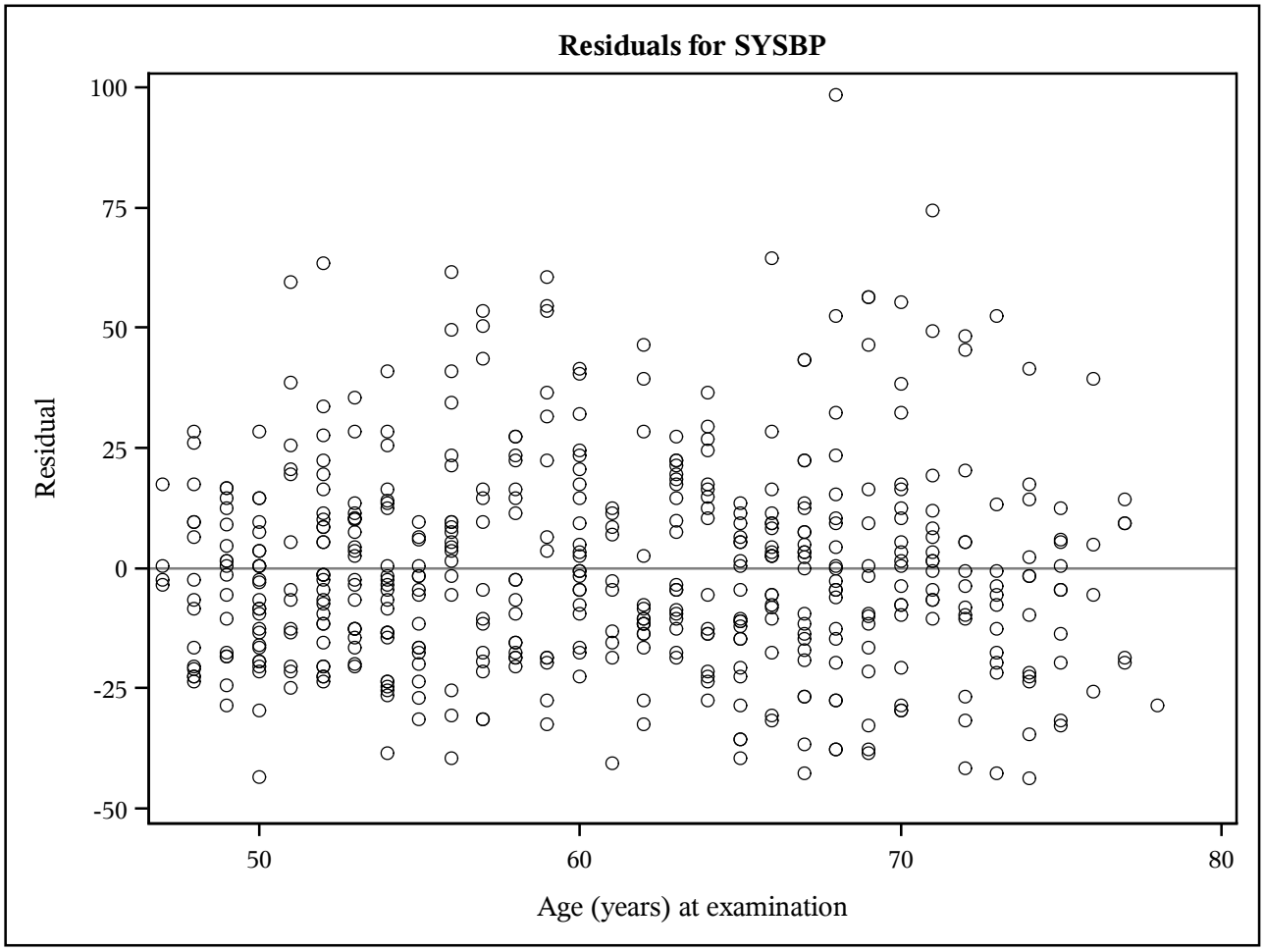
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



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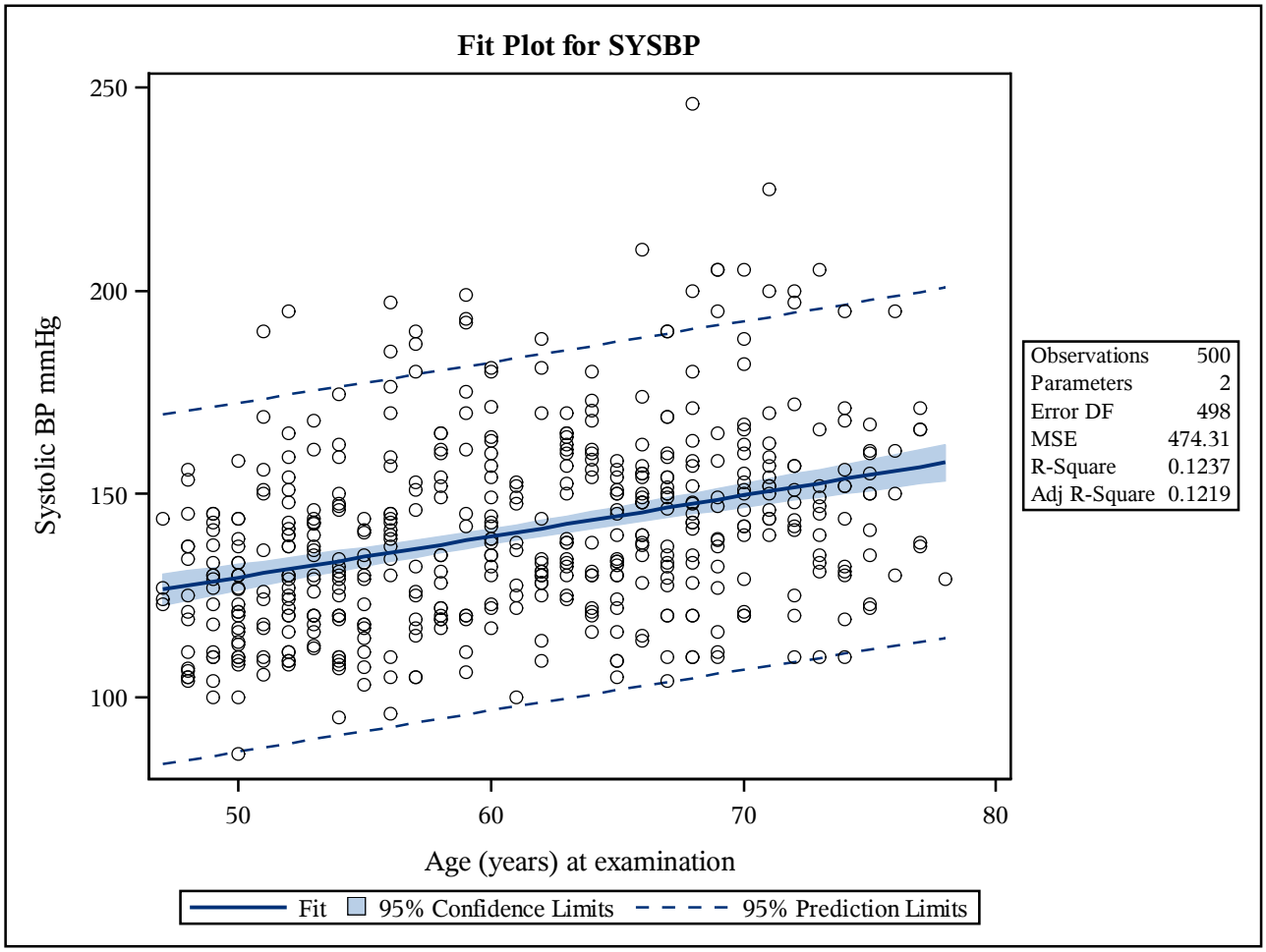
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

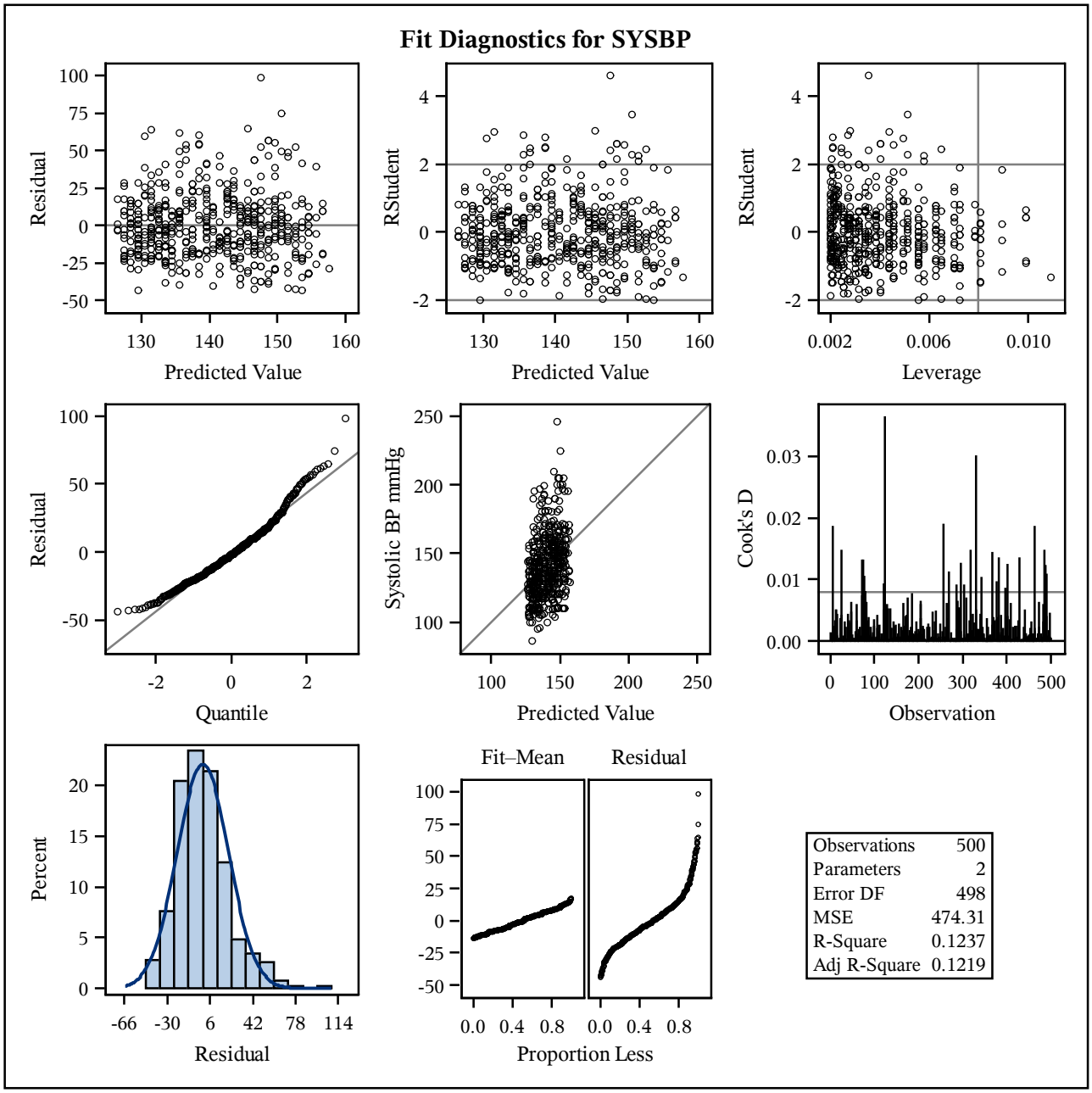
Number of Observations Read	500
Number of Observations Used	500

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	33345	33345	70.30	<.0001
Error	498	236207	474.31150		
Corrected Total	499	269553			

Root MSE	21.77869	**R-Square**	0.1237
Dependent Mean	140.40900	**Adj R-Sq**	0.1219
Coeff Var	15.51090		

Parameter Estimates								
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**95% Confidence Limits**	
Intercept	Intercept	1	79.18296	7.36680	10.75	<.0001	64.70913	93.65680
AGE	Age (years) at examination	1	1.00608	0.11999	8.38	<.0001	0.77033	1.24183

The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



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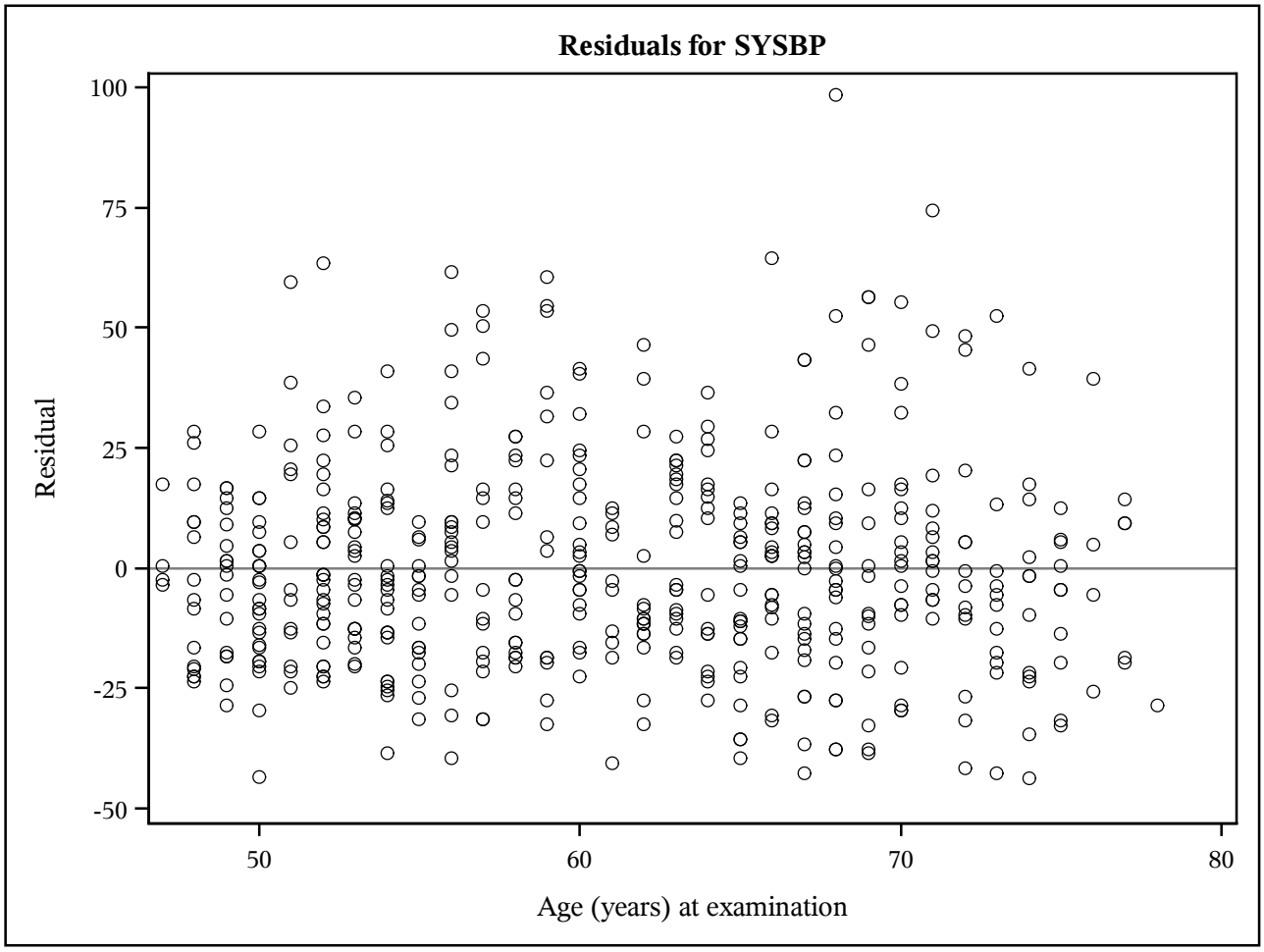
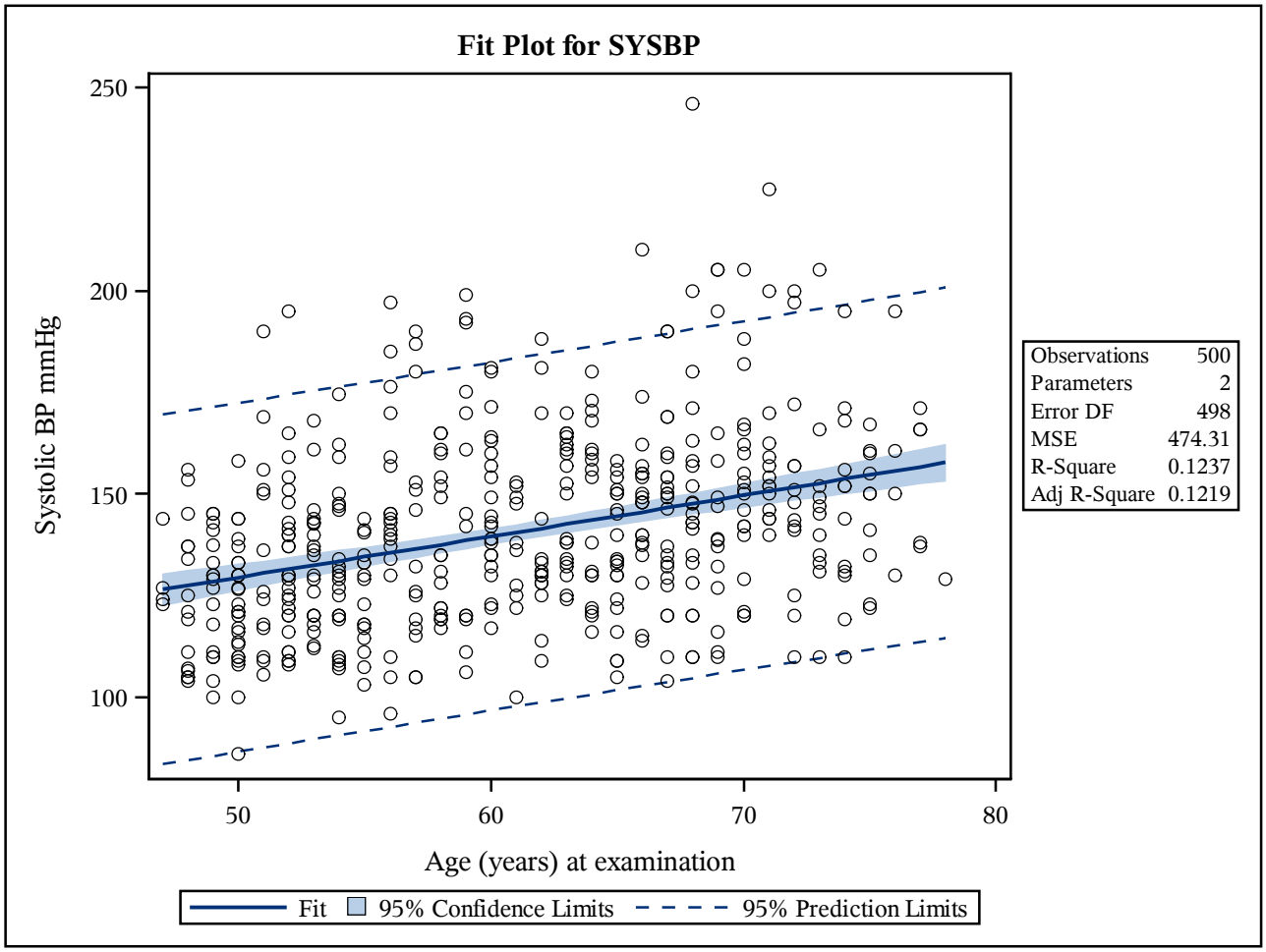


The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg



The UNIVARIATE Procedure
Variable: r (Residual)

Moments			
N	500	**Sum Weights**	500
Mean	0	**Sum Observations**	0
Std Deviation	21.7568605	**Variance**	473.360977
Skewness	0.7714428	**Kurtosis**	1.03513711
Uncorrected SS	236207.127	**Corrected SS**	236207.127
Coeff Variation	.	**Std Error Mean**	0.97299638

Basic Statistical Measures			
Location		**Variability**	
Mean	0.0000	**Std Deviation**	21.75686
Median	-2.4809	**Variance**	473.36098
Mode	-13.5113	**Range**	142.03648
		Interquartile Range	26.99696

Note: The mode displayed is the smallest of 6 modes with a count of 3.

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	0	**Pr > |t|**	1.0000
Sign	**M**	-21	**Pr >= |M|**	0.0666
Signed Rank	**S**	-5240	**Pr >= |S|**	0.1051

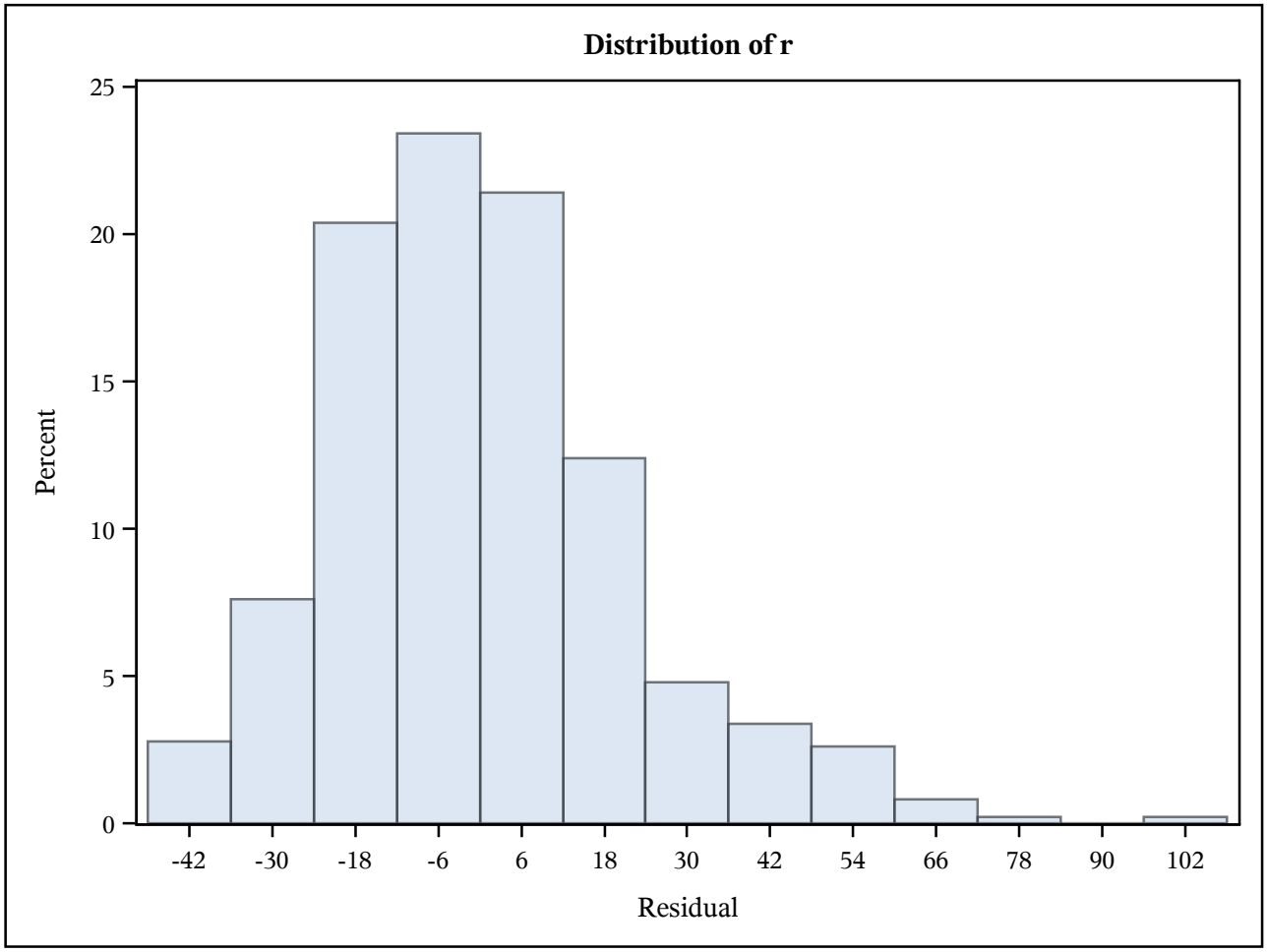
Quantiles (Definition 5)	
Quantile	**Estimate**
100% Max	98.40356
99%	60.96741
95%	42.43092
90%	27.95829
75% Q3	11.47957
50% Median	-2.48091
25% Q1	-15.51739
10%	-24.75219
5%	-31.52955

The UNIVARIATE Procedure
Variable: r (Residual)

Quantiles (Definition 5)	
Quantile	**Estimate**
1%	-41.08732
0% Min	-43.63292

Extreme Observations			
Lowest		**Highest**	
Value	**Obs**	**Value**	**Obs**
-43.6329	319	61.4765	491
-43.4870	268	63.5008	5
-42.6268	402	64.4157	487
-42.5904	129	74.3853	329
-41.6208	77	98.4036	123

The UNIVARIATE Procedure



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Variable: r (Residual)

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Mean	0	**Sum Observations**	0
Std Deviation	21.7568605	**Variance**	473.360977
Skewness	0.7714428	**Kurtosis**	1.03513711
Uncorrected SS	236207.127	**Corrected SS**	236207.127
Coeff Variation	.	**Std Error Mean**	0.97299638

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Location		**Variability**	
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Median	-2.4809	**Variance**	473.36098
Mode	-13.5113	**Range**	142.03648
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Note: The mode displayed is the smallest of 6 modes with a count of 3.

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Sign	**M**	-21	**Pr >= |M|**	0.0666
Signed Rank	**S**	-5240	**Pr >= |S|**	0.1051

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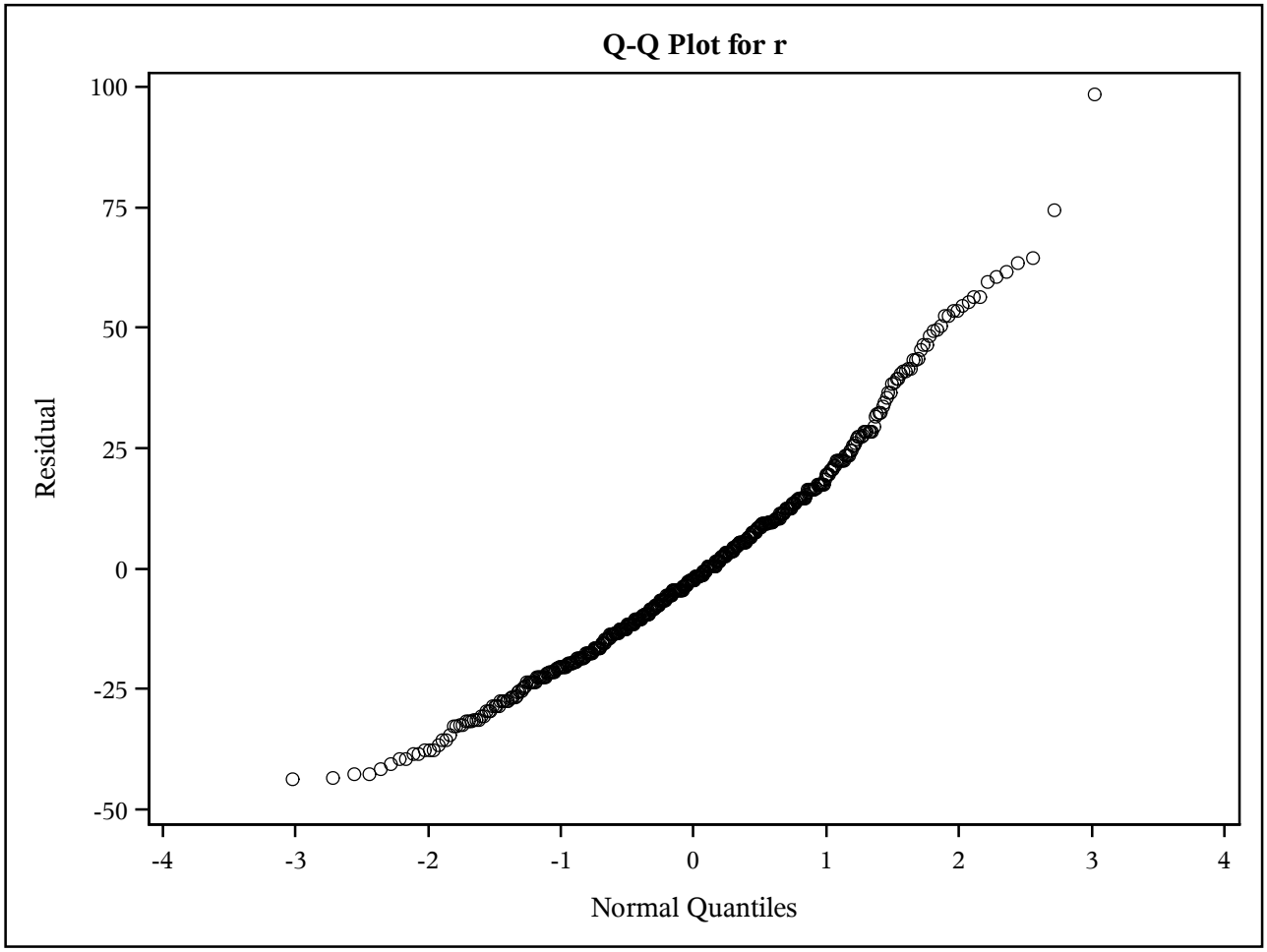
The UNIVARIATE Procedure



The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

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Number of Observations Used	500

Analysis of Variance					
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Dependent Mean	140.40900	**Adj R-Sq**	0.1219
Coeff Var	15.51090		

Parameter Estimates								
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**95% Confidence Limits**	
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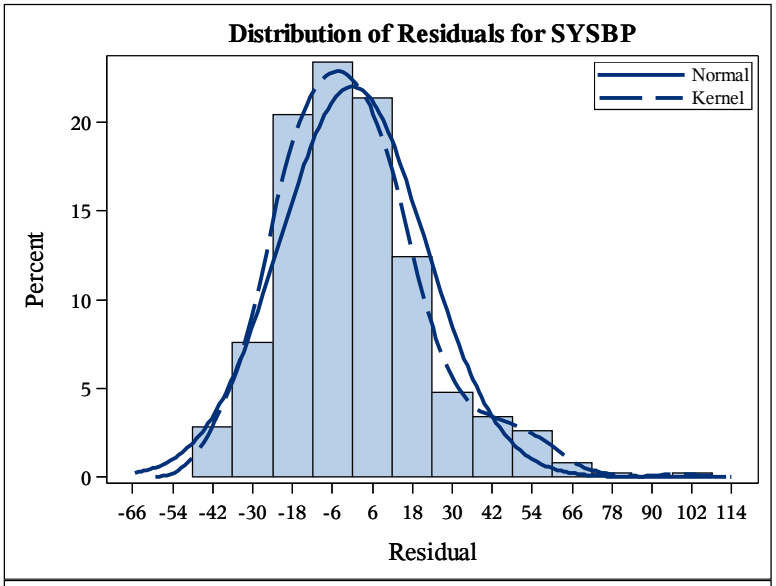
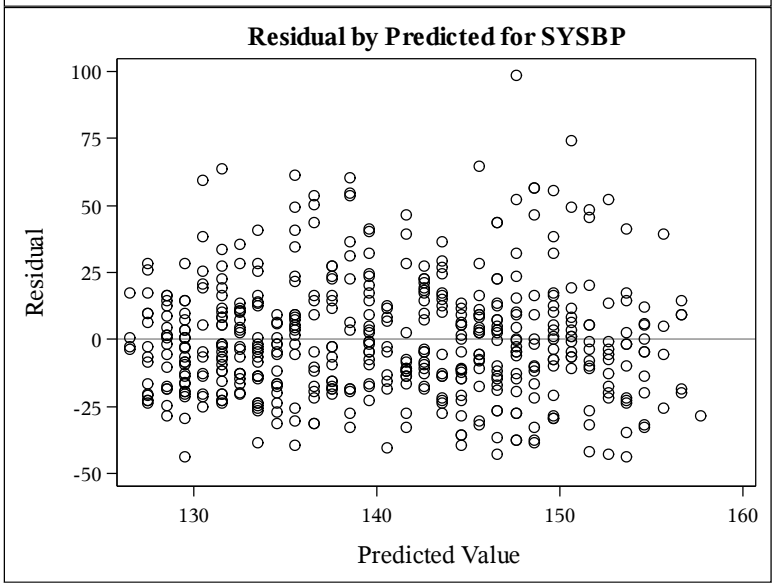
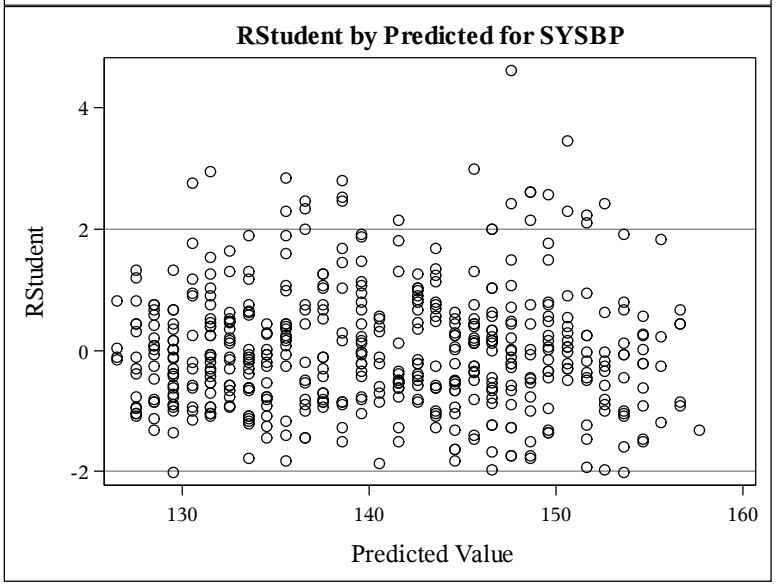
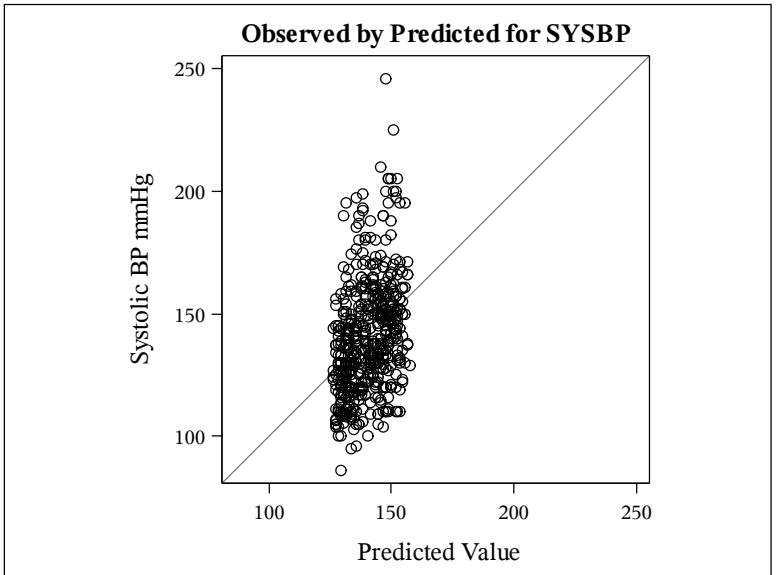
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

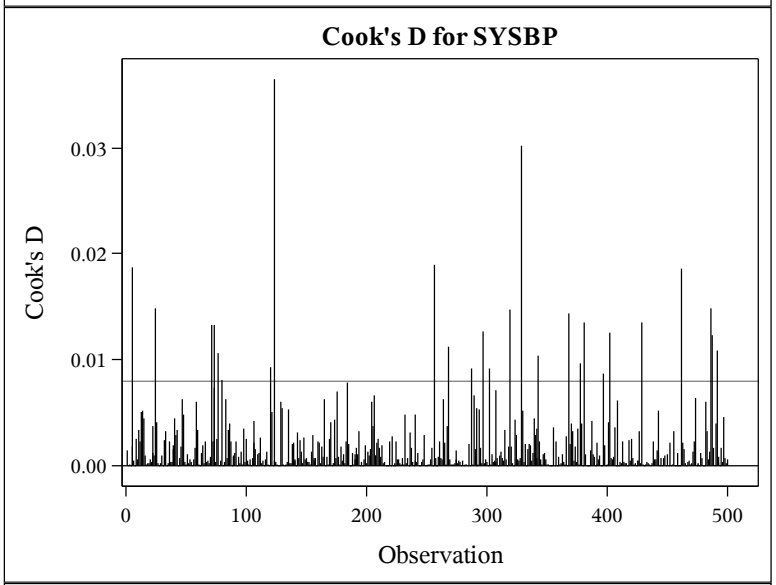


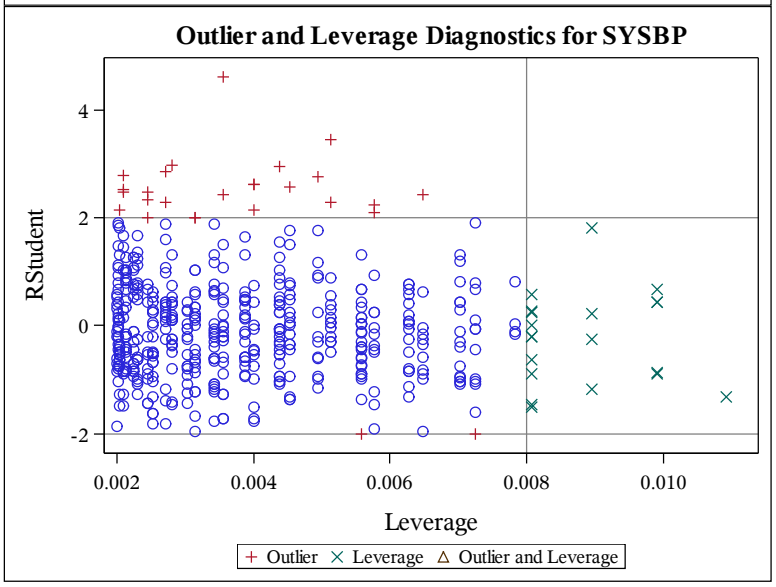




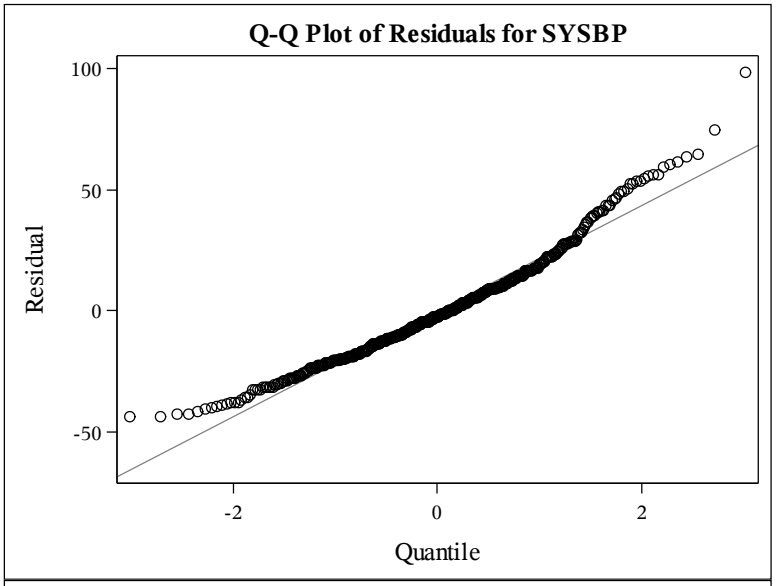
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

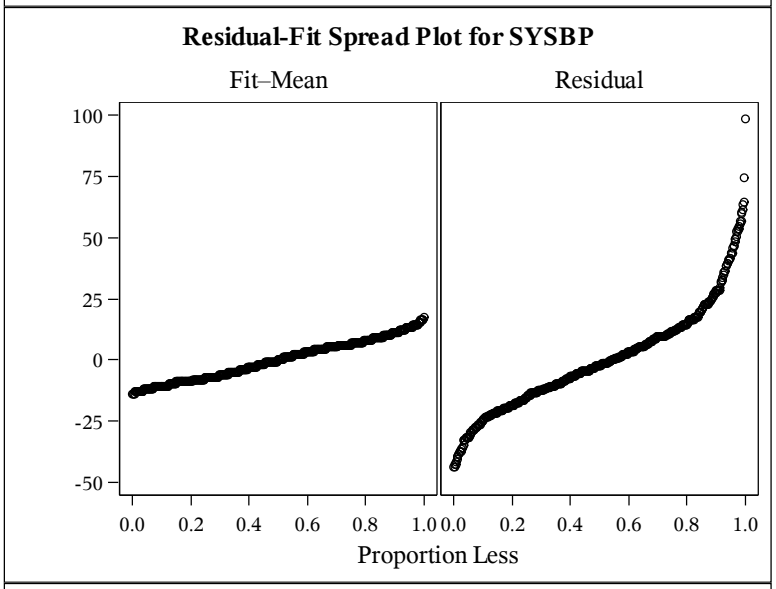


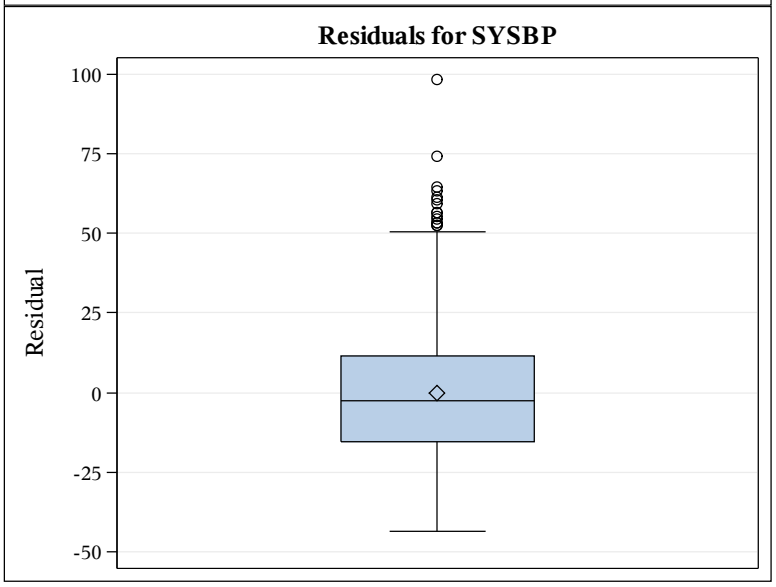




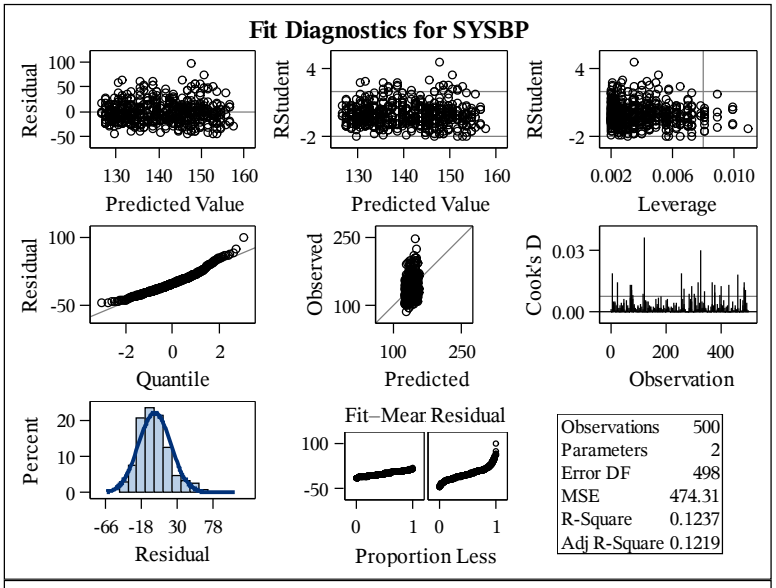
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

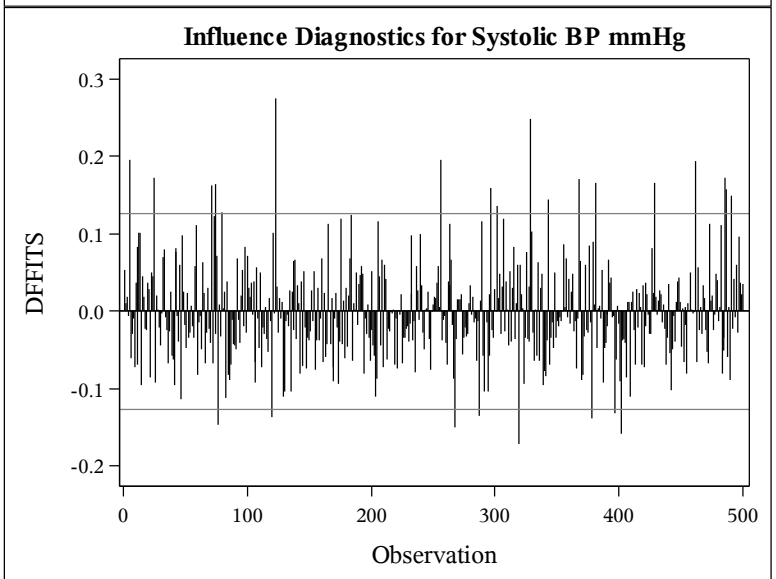


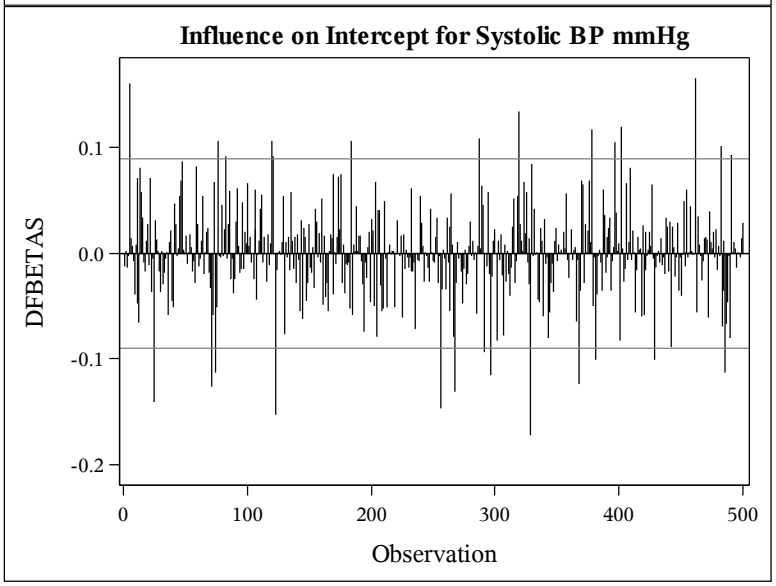




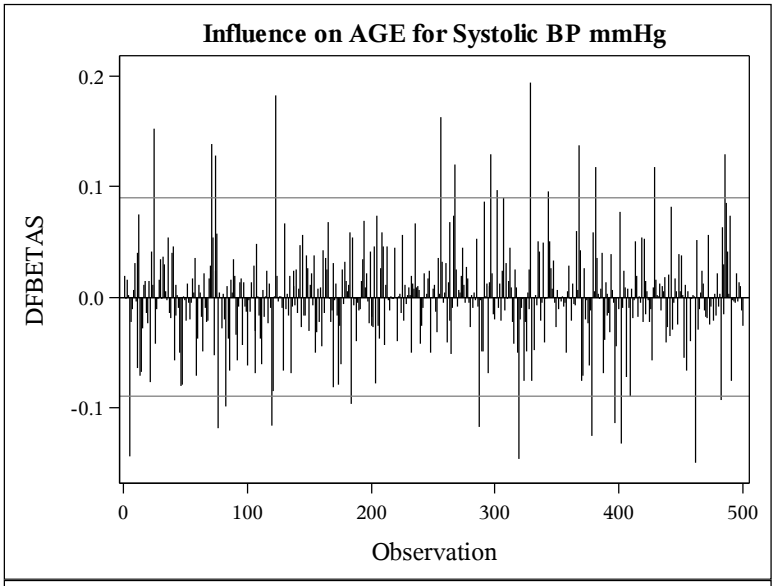
The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg

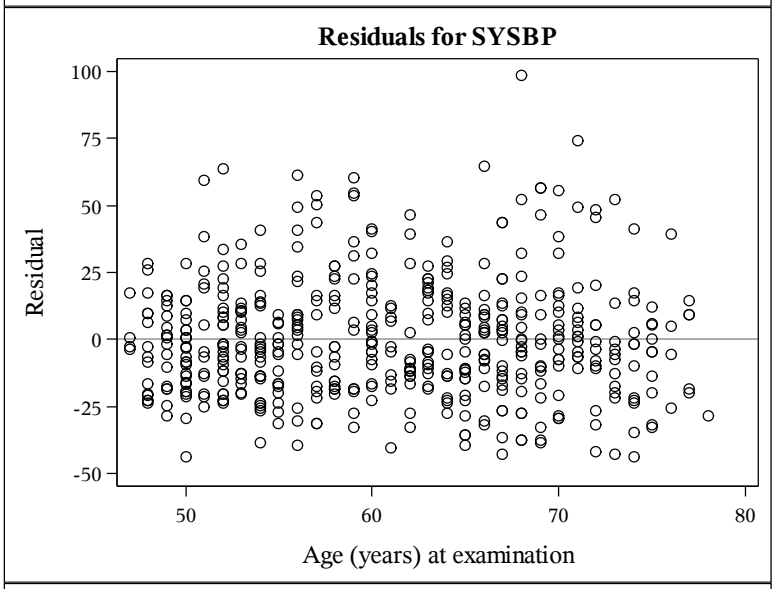


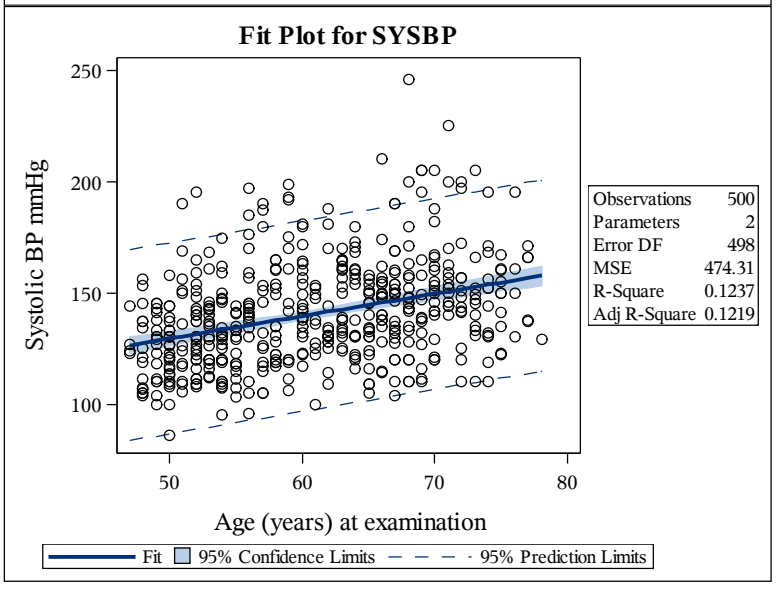




The REG Procedure
Model: MODEL1
Dependent Variable: SYSBP Systolic BP mmHg







The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP

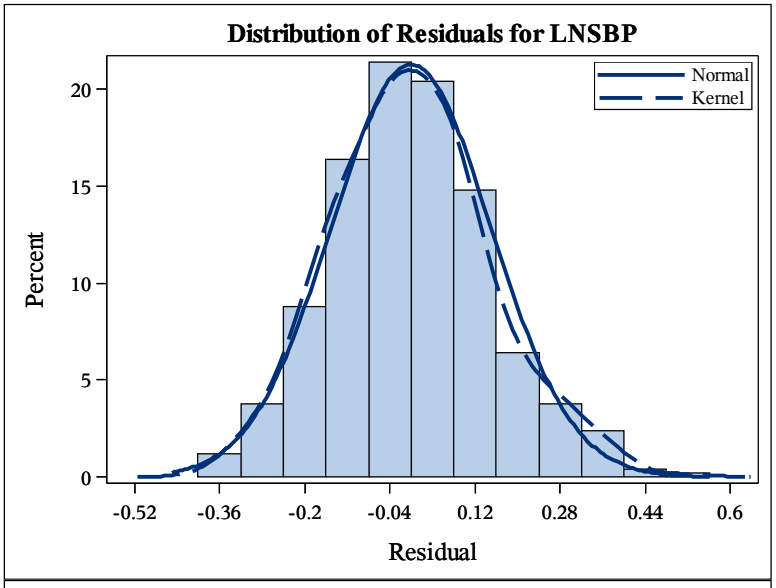
Number of Observations Read	500
Number of Observations Used	500

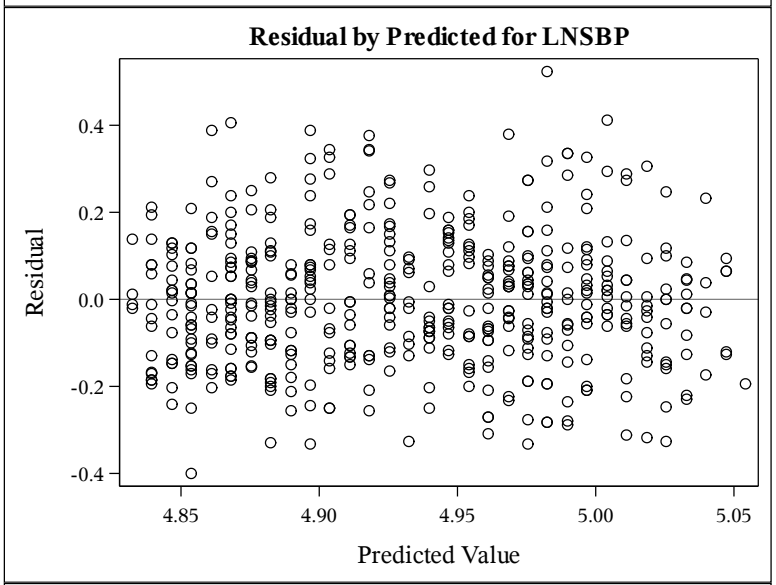
Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	1.68302	1.68302	74.55	<.0001
Error	498	11.24220	0.02257		
Corrected Total	499	12.92522			

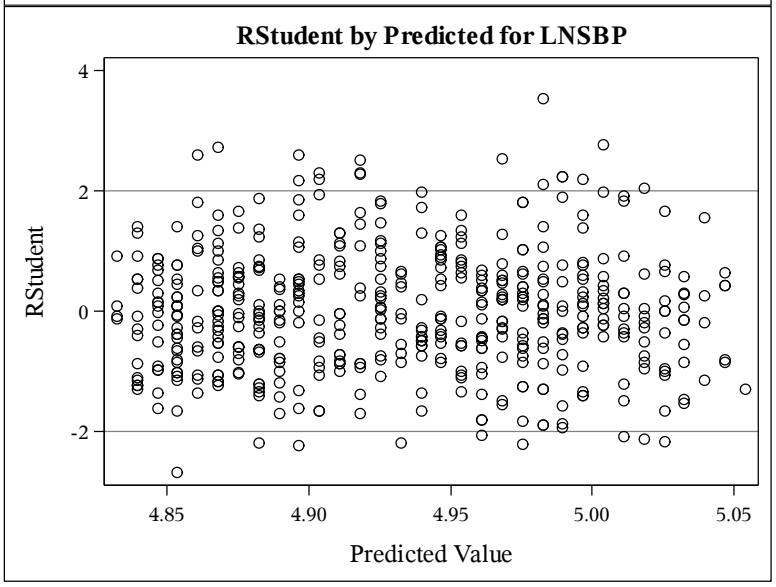
Root MSE	0.15025	**R-Square**	0.1302
Dependent Mean	4.93145	**Adj R-Sq**	0.1285
Coeff Var	3.04675		

Parameter Estimates								
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**95% Confidence Limits**	
Intercept	Intercept	1	4.49647	0.05082	88.47	<.0001	4.39662	4.59633
AGE	Age (years) at examination	1	0.00715	0.00082780	8.63	<.0001	0.00552	0.00877

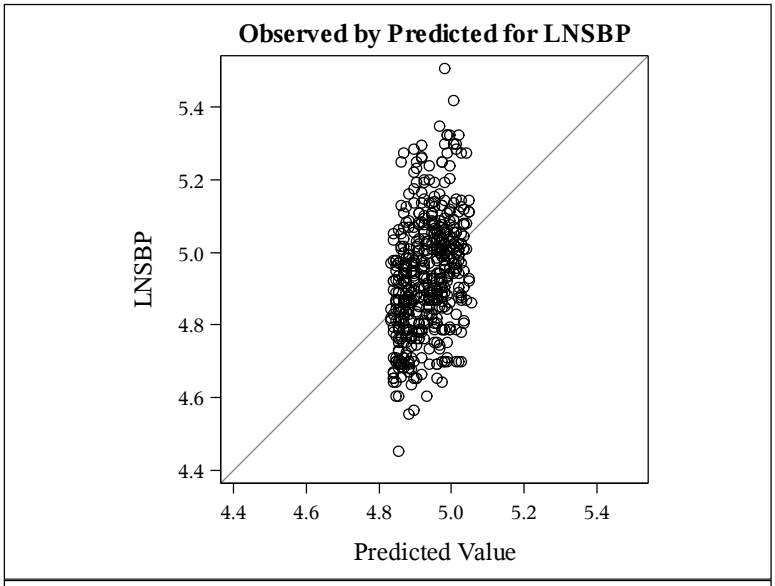
The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP

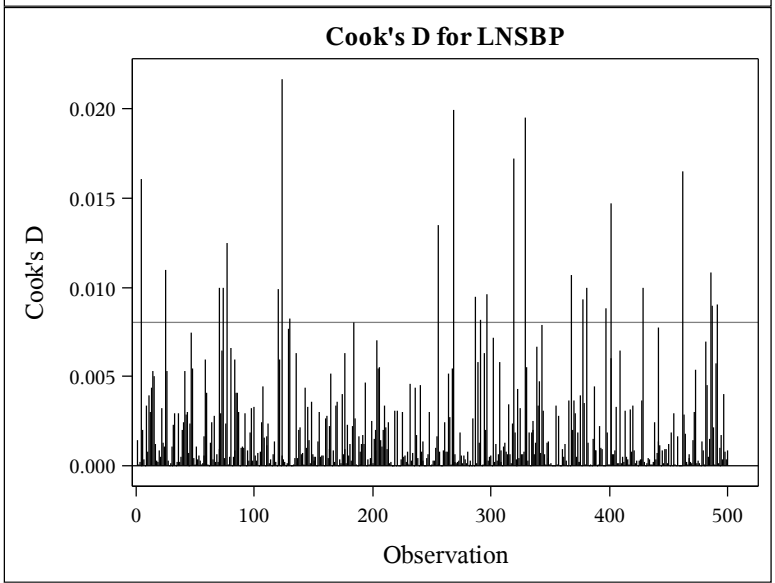


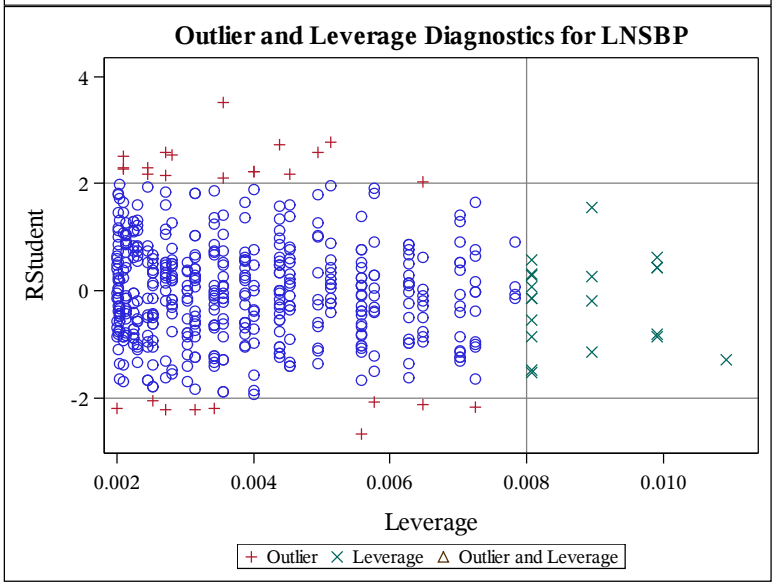




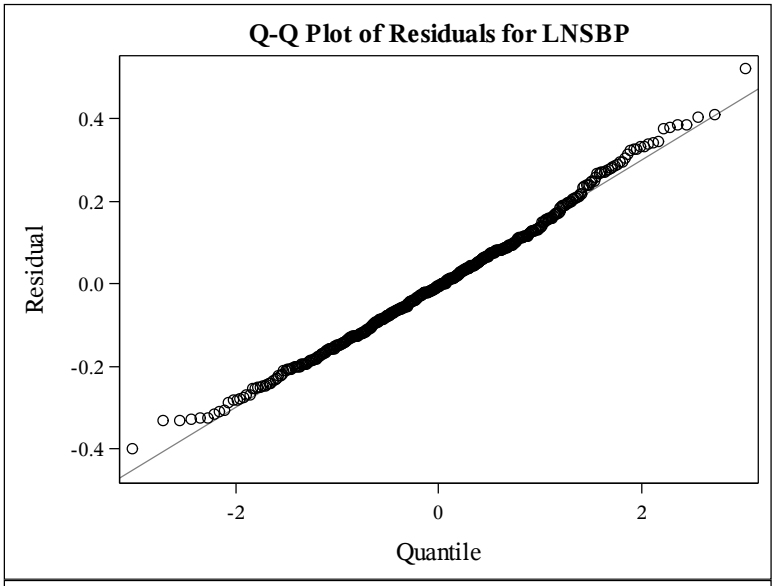
The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP

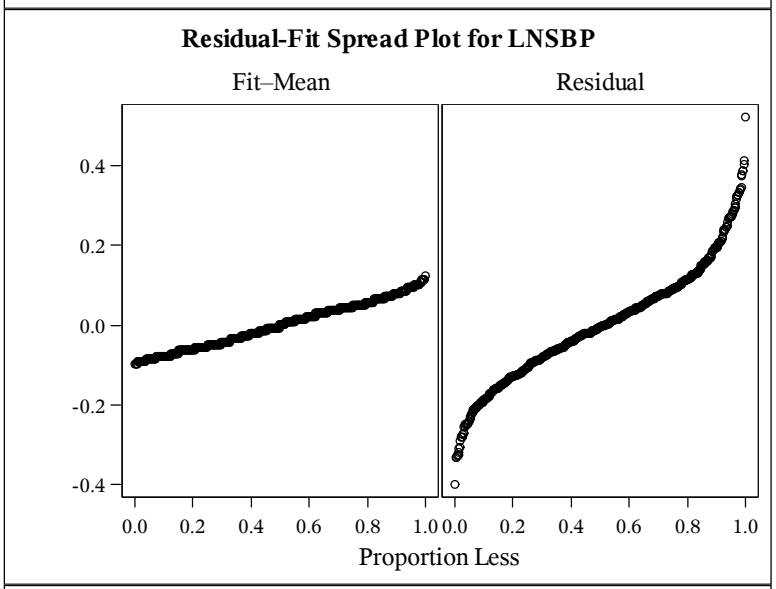


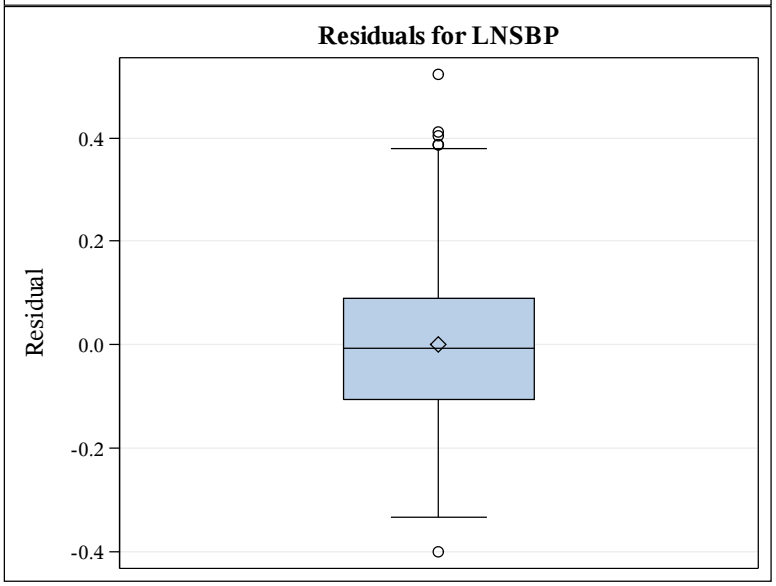




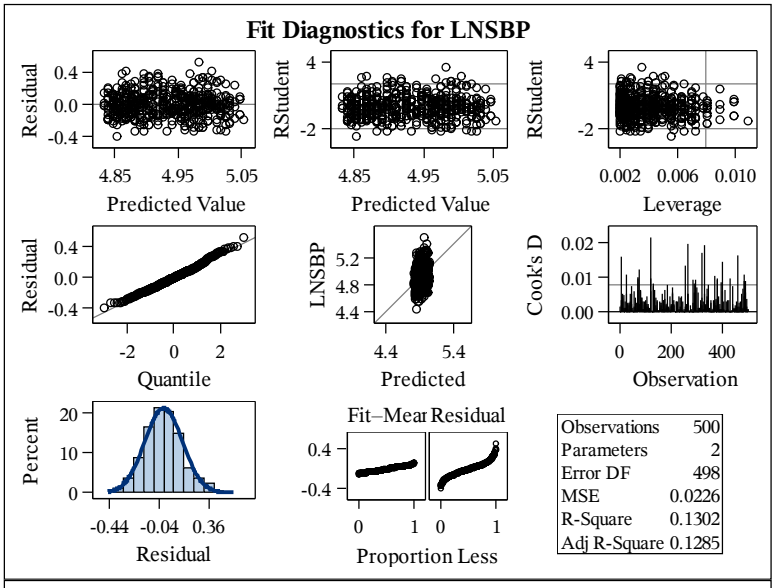
The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP

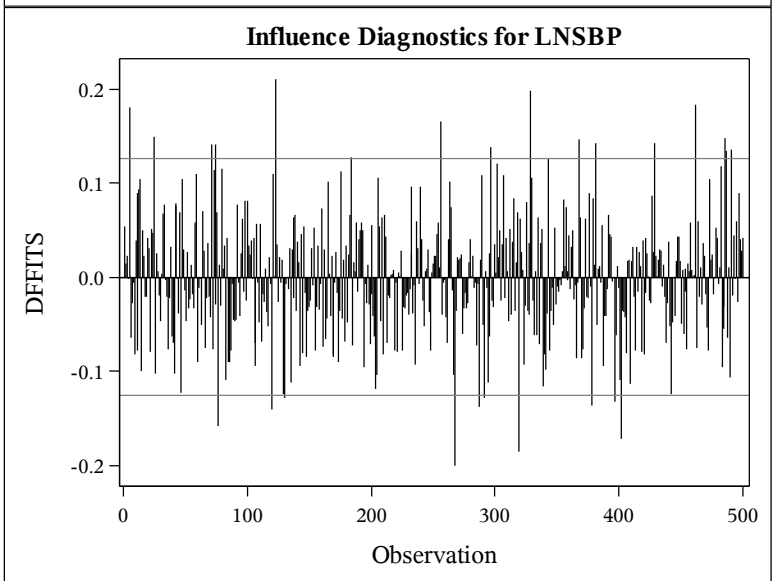


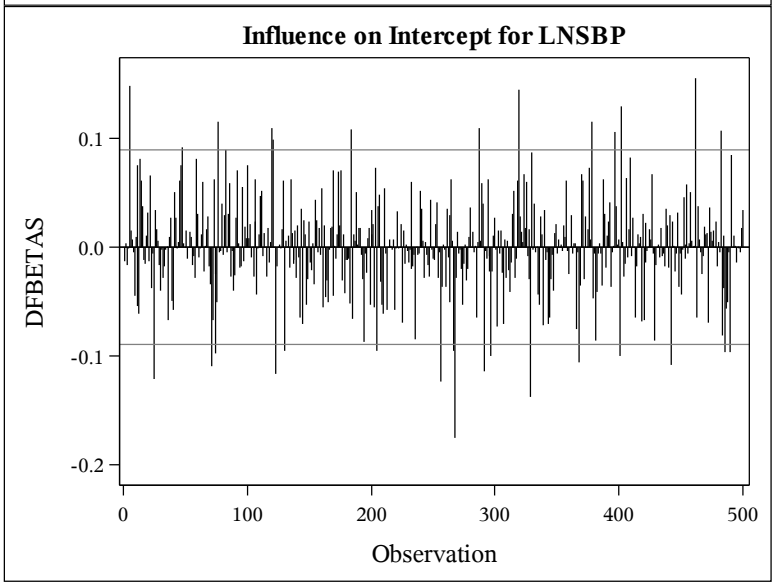




The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP







The REG Procedure
Model: MODEL1
Dependent Variable: LNSBP