

### The PHREG Procedure

Model Information		
Data Set	WORK.B1	
Dependent Variable	start	start
Dependent Variable	stop	stop
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	BRESLOW	

Number of Observations Read	118
Number of Observations Used	116

Class Level Information			
Class	Value	Design Variables	
treatment	0	0	0
	1	1	0
	2	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
116	62	54	46.55

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

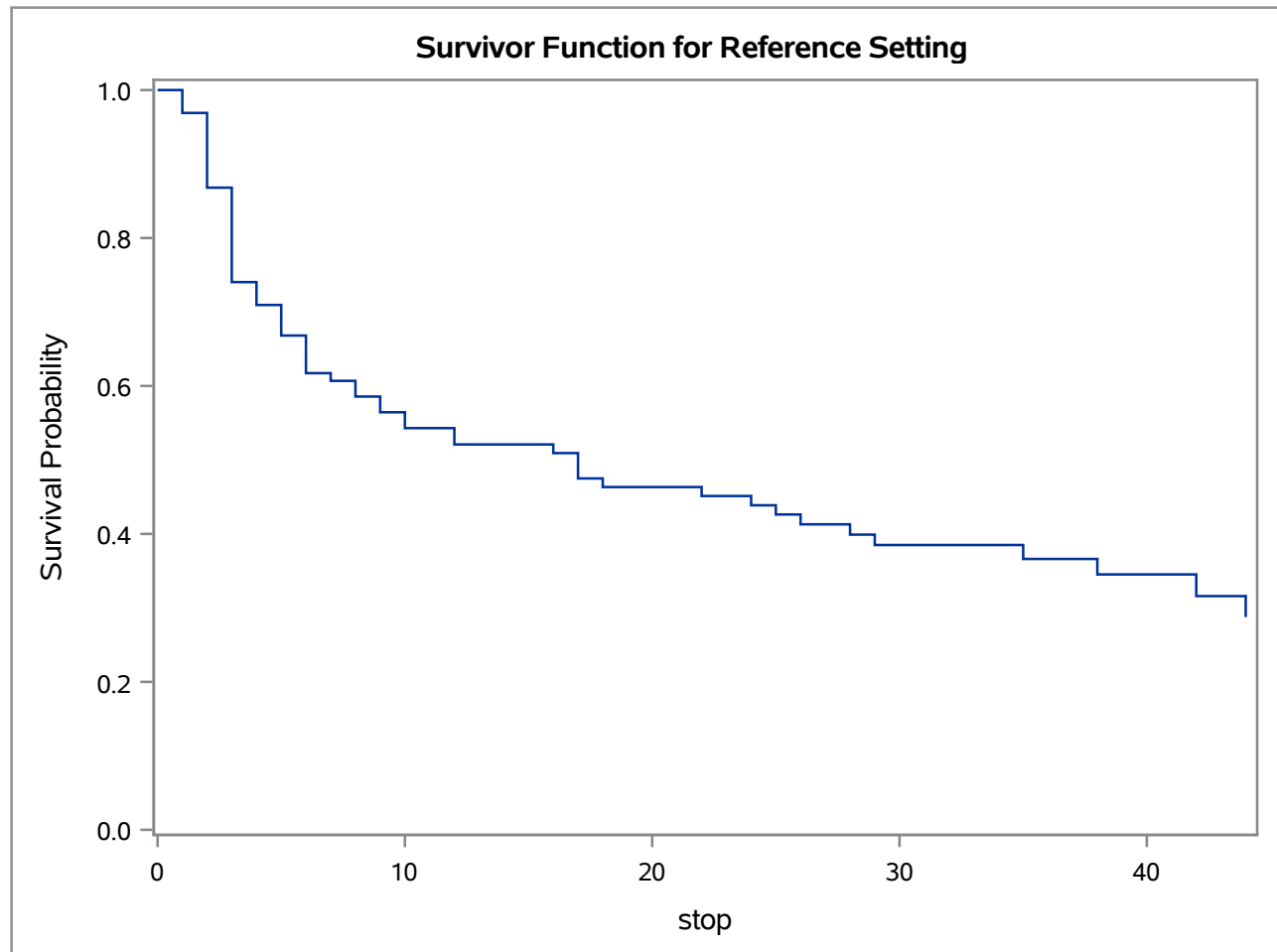
Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	527.595
AIC	529.956	533.595
SBC	529.956	539.977

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	2.3608	3	0.5010
Score	2.4215	3	0.4896
Wald	2.3987	3	0.4939

## The PHREG Procedure

Type 3 Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	1.9318	0.3806
size	1	0.4161	0.5189

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	1	1	-0.34620	0.32025	1.1686	0.2797	0.707	treatment 1
treatment	2	1	-0.36672	0.30282	1.4666	0.2259	0.693	treatment 2
size		1	0.04909	0.07610	0.4161	0.5189	1.050	size



Reference Set of Covariates for Plotting	
size	treatment
2.0344827586	0

### The PHREG Procedure

Model Information		
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Dependent Variable	stop	stop
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	BRESLOW	

Number of Observations Read	118
Number of Observations Used	116

Class Level Information			
Class	Value	Design Variables	
treatment	0	0	0
	1	1	0
	2	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
116	62	54	46.55

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

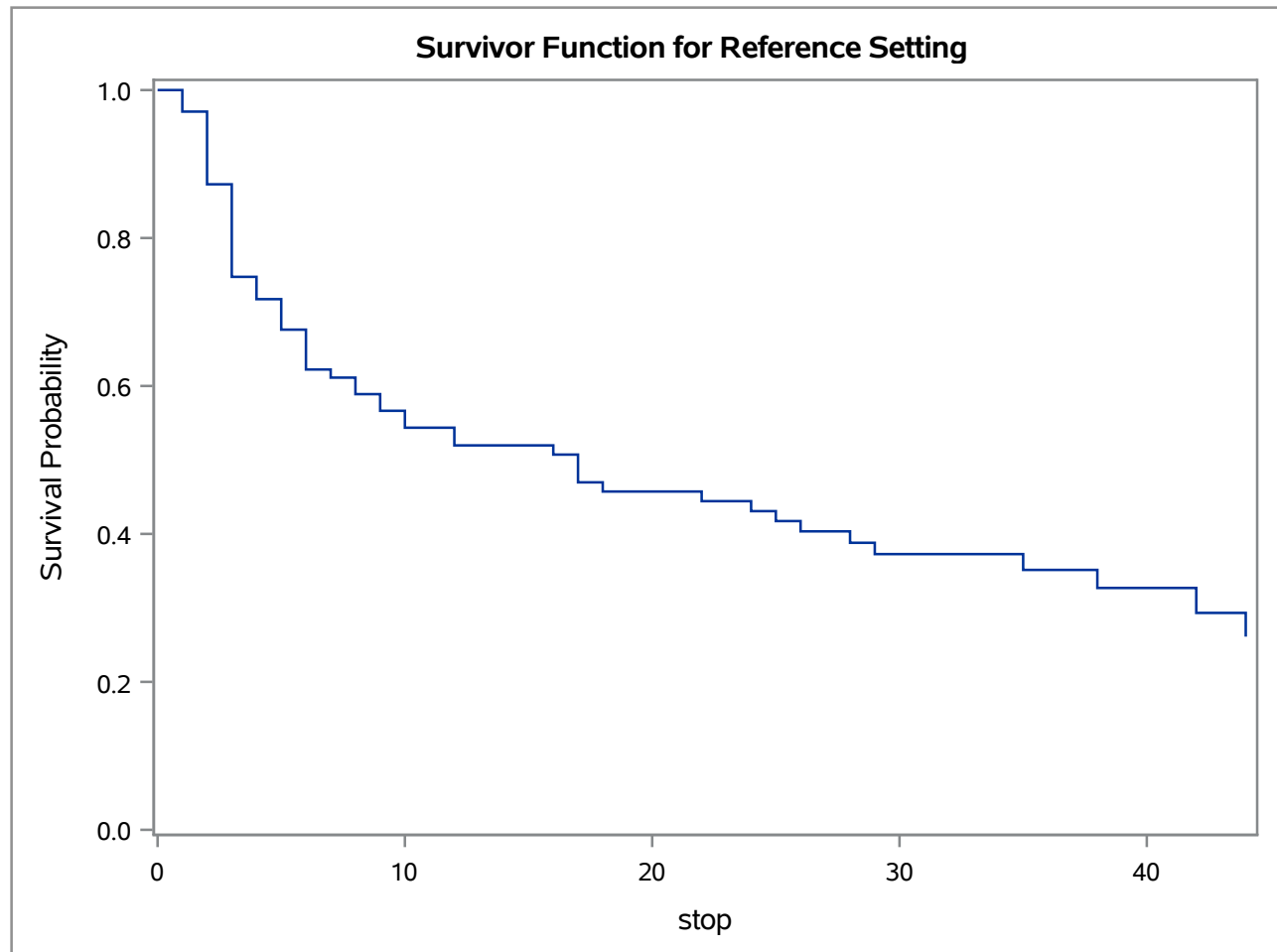
Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	516.001
AIC	529.956	522.001
SBC	529.956	528.382

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	13.9553	3	0.0030
Score	16.8171	3	0.0008
Wald	15.7511	3	0.0013

## The PHREG Procedure

Type 3 Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	3.1136	0.2108
number	1	14.5482	0.0001

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	1	1	-0.32692	0.32093	1.0377	0.3084	0.721	treatment 1
treatment	2	1	-0.53275	0.31129	2.9290	0.0870	0.587	treatment 2
number		1	0.24766	0.06493	14.5482	0.0001	1.281	number



Reference Set of Covariates for Plotting	
number	treatment
2.025862069	0

## Cox regression model with treatment as a categorical predictor

## The PHREG Procedure

Model Information		
Data Set	WORK.B1	
Dependent Variable	start	start
Dependent Variable	stop	stop
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	BRESLOW	

Number of Observations Read	118
Number of Observations Used	116

Class Level Information			
Class	Value	Design Variables	
treatment	0	0	0
	1	1	0
	2	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
116	62	54	46.55

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	515.477
AIC	529.956	523.477
SBC	529.956	531.986

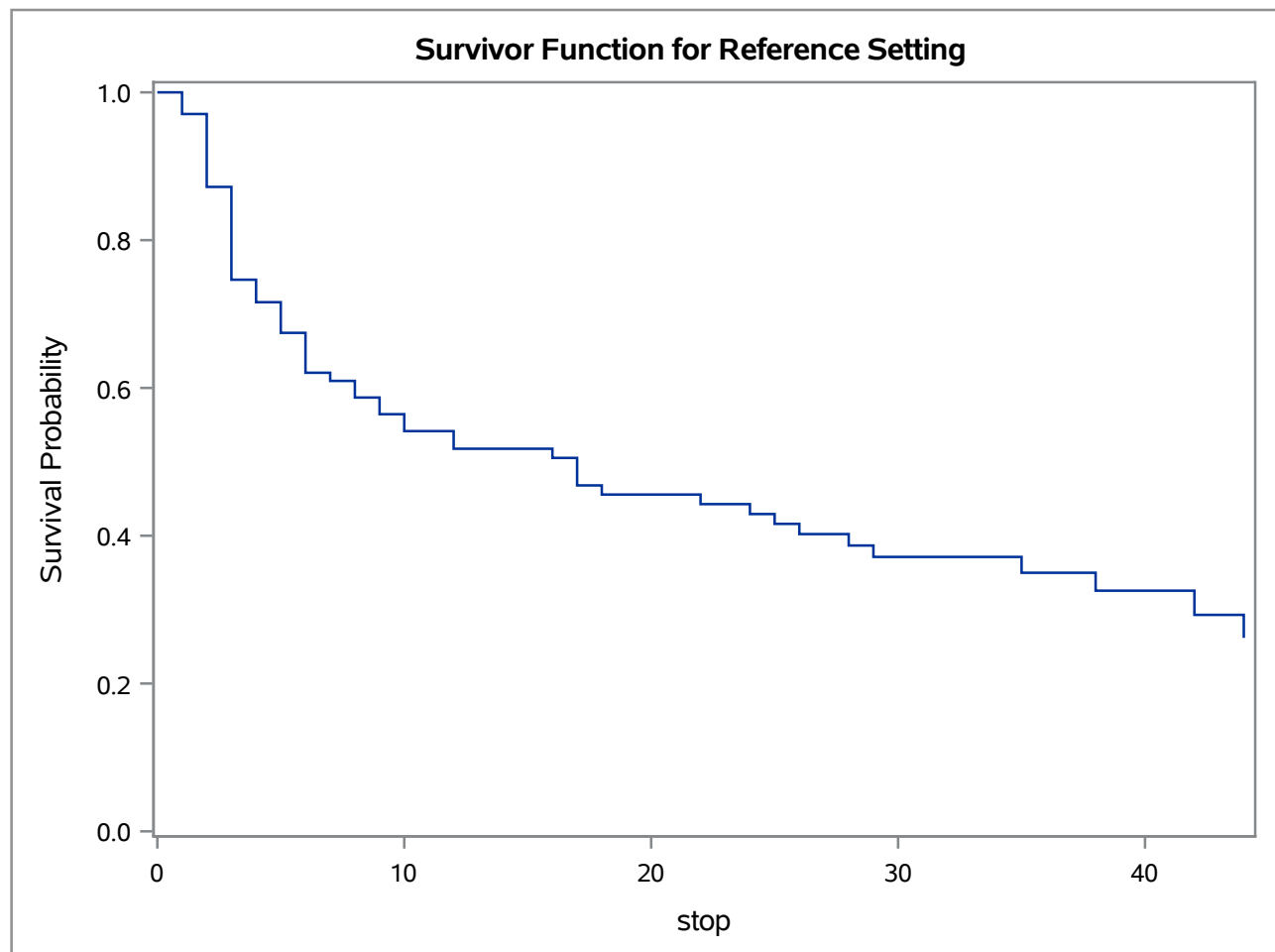
Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	14.4789	4	0.0059
Score	17.1586	4	0.0018
Wald	16.0508	4	0.0030

# Cox regression model with treatment as a categorical predictor

## The PHREG Procedure

Type 3 Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	3.2047	0.2014
number	1	14.6858	0.0001
size	1	0.5521	0.4575

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	1	1	-0.34332	0.32242	1.1339	0.2869	0.709	treatment 1
treatment	2	1	-0.54030	0.31258	2.9877	0.0839	0.583	treatment 2
number		1	0.24975	0.06517	14.6858	0.0001	1.284	number
size		1	0.05506	0.07410	0.5521	0.4575	1.057	size



**Cox regression model with treatment as a categorical predictor****The PHREG Procedure**

Reference Set of Covariates for Plotting		
number	size	treatment
2.025862069	2.0344827586	0

**Cox regression model with treatment as a categorical predictor**

Directory	
<b>Libref</b>	WORK
<b>Engine</b>	V9
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<b>Access Permission</b>	rwX-----
<b>Owner Name</b>	u60468981
<b>File Size</b>	4KB
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2	B1	DATA	256KB	12/01/2022 19:41:27
3	BASELINE	DATA	256KB	12/01/2022 19:38:40
4	COV	DATA	256KB	12/01/2022 19:38:40
5	COVAR	DATA	256KB	12/01/2022 19:41:28
6	EXP	DATA	256KB	12/01/2022 19:38:47
7	EXP1	DATA	256KB	12/01/2022 19:38:47
8	FORMATS	CATALOG	24KB	12/01/2022 19:38:40
9	GSEG	CATALOG	132KB	12/01/2022 19:38:47
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**Cox regression model with treatment as a categorical predictor**

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Ties Handling	BRESLOW	

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Class Level Information			
Class	Value	Design Variables	
treatment	0	0	0
	1	1	0
	2	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
116	62	54	46.55

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

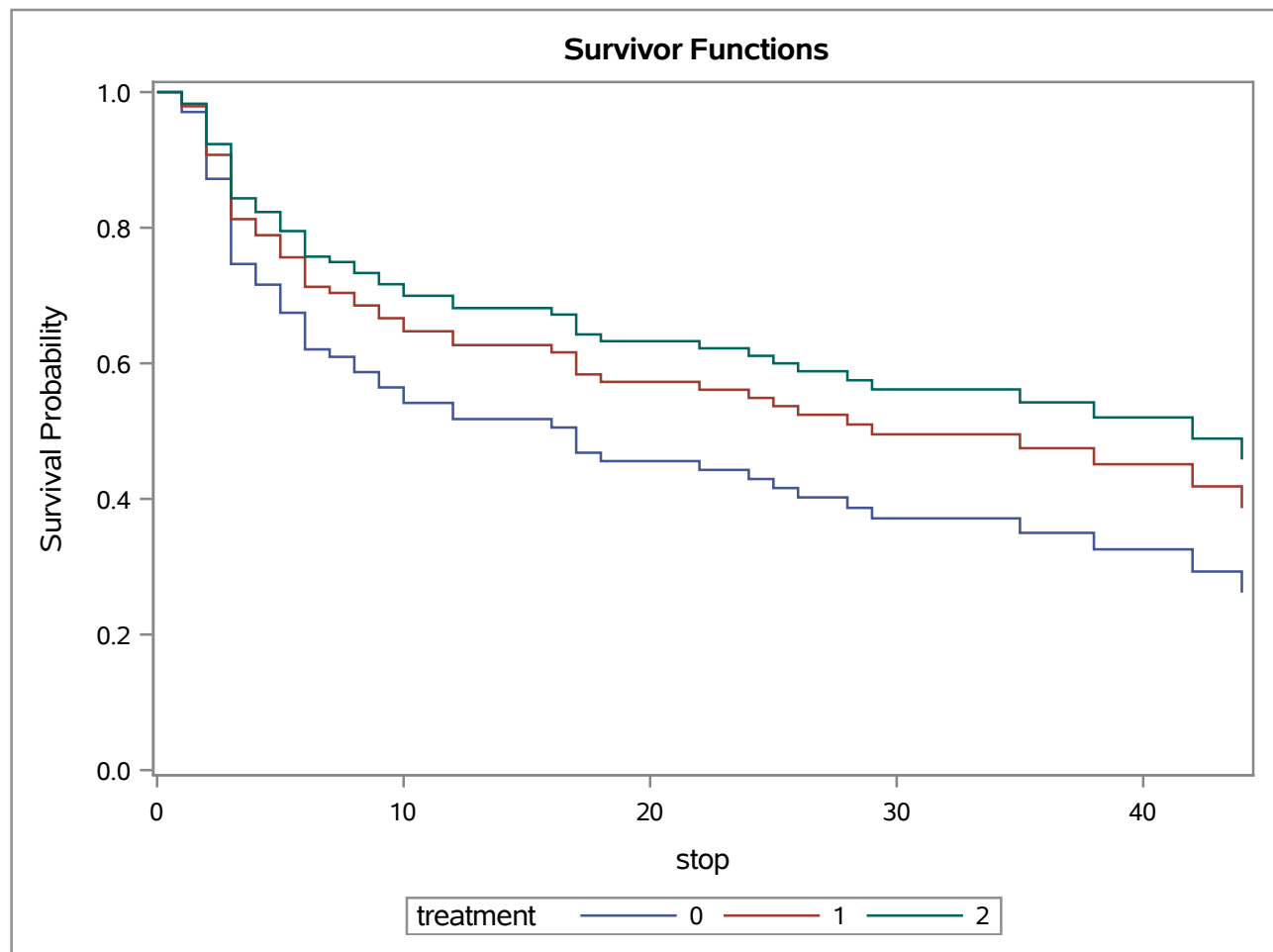
Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	515.477
AIC	529.956	523.477
SBC	529.956	531.986

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	14.4789	4	0.0059
Score	17.1586	4	0.0018
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## The PHREG Procedure

Type 3 Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	3.2047	0.2014
number	1	14.6858	0.0001
size	1	0.5521	0.4575

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	1	1	-0.34332	0.32242	1.1339	0.2869	0.709	treatment 1
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## Expanding the Cox regression model with interaction terms

### The PHREG Procedure

Model Information		
Data Set	WORK.B1	
Dependent Variable	start	start
Dependent Variable	stop	stop
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	BRESLOW	

Number of Observations Read	118
Number of Observations Used	116

Class Level Information			
Class	Value	Design Variables	
treatment	placebo	0	0
	pyridoxine	1	0
	thiotepa	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
116	62	54	46.55

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	513.657
AIC	529.956	527.657
SBC	529.956	542.546

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	16.2996	7	0.0225
Score	20.3000	7	0.0050
Wald	18.5240	7	0.0098

## Expanding the Cox regression model with interaction terms

### The PHREG Procedure

Joint Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	1.3441	0.5107
number	1	4.2300	0.0397
number*treatment	2	0.1060	0.9484
size	1	2.1720	0.1405
number*size	1	1.6426	0.2000

**Note:** Under full-rank parameterizations, Type 3 effect tests are replaced by joint tests. The joint test for an effect is a test that all of the parameters associated with that effect are zero. Such joint tests might not be equivalent to Type 3 effect tests under GLM parameterization.

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	pyridoxine	1	-0.33644	0.52967	0.4035	0.5253	.	treatment pyridoxine
treatment	thiotepa	1	-0.58773	0.51039	1.3260	0.2495	.	treatment thiotepa
number		1	0.34286	0.16670	4.2300	0.0397	.	number
number*treatment	pyridoxine	1	0.04542	0.18133	0.0627	0.8022	.	treatment pyridoxine * number
number*treatment	thiotepa	1	0.05220	0.16404	0.1013	0.7503	.	treatment thiotepa * number
size		1	0.21461	0.14562	2.1720	0.1405	.	size
number*size		1	-0.07291	0.05689	1.6426	0.2000	.	number * size

Using hazard ratio and graphs to interpret effects, particularly interactions

## Expanding the Cox regression model with interaction terms

## The PHREG Procedure

Model Information		
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Ties Handling	BRESLOW	

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Class Level Information			
Class	Value	Design Variables	
treatment	placebo	0	0
	pyridoxine	1	0
	thiotepa	0	1

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Total	Event	Censored	Percent Censored
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## Expanding the Cox regression model with interaction terms

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size		1	0.21461	0.14562	2.1720	0.1405	.	size
number*size		1	-0.07291	0.05689	1.6426	0.2000	.	number * size

Effect of 1-unit change in size by treatment: Hazard Ratios for size			
Description	Point Estimate	95% Wald Confidence Limits	
size Unit=1 At treatment=placebo number=2.025862	1.069	0.918	1.246
size Unit=1 At treatment=pyridoxine number=2.025862	1.069	0.918	1.246
size Unit=1 At treatment=thiotepa number=2.025862	1.069	0.918	1.246

Effect of 1-unit change in size across number: Hazard Ratios for size			
Description	Point Estimate	95% Wald Confidence Limits	
size Unit=1 At number=1	1.152	0.943	1.407
size Unit=1 At number=2	1.071	0.919	1.249
size Unit=1 At number=3	0.996	0.833	1.190
size Unit=1 At number=4	0.926	0.718	1.195
size Unit=1 At number=5	0.861	0.606	1.222

## Expanding the Cox regression model with interaction terms

### The PHREG Procedure

Effect of 1-unit change in size across number: Hazard Ratios for size			
Description	Point Estimate	95% Wald Confidence Limits	
size Unit=1 At number=6	0.800	0.508	1.260
size Unit=1 At number=7	0.744	0.425	1.302
size Unit=1 At number=8	0.692	0.355	1.349



# Check PH assumptions using log(-log)

## The LIFETEST Procedure

Stratum 1: treatment = 0

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	48
0.0000	*	.	.	.	0	47
1.0000		0.9787	0.0213	0.0210	1	46
1.0000	*	.	.	.	1	45
2.0000		.	.	.	2	44
2.0000		.	.	.	3	43
2.0000		.	.	.	4	42
2.0000		0.8917	0.1083	0.0457	5	41
3.0000		.	.	.	6	40
3.0000		.	.	.	7	39
3.0000		.	.	.	8	38
3.0000		.	.	.	9	37
3.0000		.	.	.	10	36
3.0000		.	.	.	11	35
3.0000		0.7395	0.2605	0.0647	12	34
4.0000	*	.	.	.	12	33
5.0000		.	.	.	13	32
5.0000		0.6947	0.3053	0.0681	14	31
6.0000		.	.	.	15	30
6.0000		0.6498	0.3502	0.0707	16	29
7.0000		0.6274	0.3726	0.0717	17	28
7.0000	*	.	.	.	17	27
9.0000		.	.	.	18	26
9.0000		0.5810	0.4190	0.0735	19	25
10.0000		0.5577	0.4423	0.0742	20	24
10.0000	*	.	.	.	20	23
12.0000		.	.	.	21	22
12.0000		0.5092	0.4908	0.0752	22	21
14.0000	*	.	.	.	22	20
16.0000		0.4838	0.5162	0.0757	23	19
17.0000		0.4583	0.5417	0.0758	24	18
18.0000		0.4328	0.5672	0.0758	25	17
18.0000	*	.	.	.	25	16

## Check PH assumptions using log(-log)

### The LIFETEST Procedure

Stratum 1: treatment = 0

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
23.0000	*	.	.	.	25	15
25.0000		0.4040	0.5960	0.0760	26	14
26.0000	*	.	.	.	26	13
28.0000		0.3729	0.6271	0.0763	27	12
29.0000		0.3418	0.6582	0.0760	28	11
29.0000	*	.	.	.	28	10
29.0000	*	.	.	.	28	9
29.0000	*	.	.	.	28	8
32.0000	*	.	.	.	28	7
34.0000	*	.	.	.	28	6
35.0000		0.2849	0.7151	0.0819	29	5
36.0000	*	.	.	.	29	4
37.0000	*	.	.	.	29	3
41.0000	*	.	.	.	29	2
49.0000	*	.	.	.	29	1
59.0000	*	.	.	.	29	0

**Note:** The marked survival times are censored observations.

### Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	28.0000	.
50	16.0000	LOGLOG	6.0000	29.0000
25	3.0000	LOGLOG	3.0000	7.0000

Mean	Standard Error
18.2899	2.1377

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

# Check PH assumptions using log(-log)

## The LIFETEST Procedure

Stratum 2: treatment = 1

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	32
0.0000	*	.	.	.	0	31
2.0000		.	.	.	1	30
2.0000		0.9355	0.0645	0.0441	2	29
2.0000	*	.	.	.	2	28
3.0000		.	.	.	3	27
3.0000		.	.	.	4	26
3.0000		.	.	.	5	25
3.0000		.	.	.	6	24
3.0000		0.7684	0.2316	0.0768	7	23
4.0000		0.7350	0.2650	0.0804	8	22
4.0000	*	.	.	.	8	21
5.0000		0.7000	0.3000	0.0838	9	20
6.0000		0.6650	0.3350	0.0867	10	19
7.0000	*	.	.	.	10	18
8.0000		.	.	.	11	17
8.0000		0.5911	0.4089	0.0914	12	16
8.0000	*	.	.	.	12	15
10.0000		0.5517	0.4483	0.0934	13	14
14.0000	*	.	.	.	13	13
26.0000	*	.	.	.	13	12
29.0000	*	.	.	.	13	11
32.0000	*	.	.	.	13	10
33.0000	*	.	.	.	13	9
38.0000	*	.	.	.	13	8
40.0000	*	.	.	.	13	7
40.0000	*	.	.	.	13	6
42.0000		0.4598	0.5402	0.1145	14	5
44.0000		0.3678	0.6322	0.1231	15	4
45.0000	*	.	.	.	15	3
54.0000	*	.	.	.	15	2
57.0000	*	.	.	.	15	1
60.0000	*	.	.	.	15	0

## Check PH assumptions using log(-log)

### The LIFETEST Procedure

Stratum 2: treatment = 1

**Note:** The marked survival times are censored observations.

#### Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	42.0000	.
50	42.0000	LOGLOG	6.0000	.
25	4.0000	LOGLOG	3.0000	8.0000

Mean	Standard Error
26.2259	3.7609

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

# Check PH assumptions using log(-log)

## The LIFETEST Procedure

Stratum 3: treatment = 2

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	38
1.0000		.	.	.	1	37
1.0000		0.9474	0.0526	0.0362	2	36
1.0000	*	.	.	.	2	35
1.0000	*	.	.	.	2	34
2.0000		.	.	.	3	33
2.0000		.	.	.	4	32
2.0000		.	.	.	5	31
2.0000		0.8359	0.1641	0.0613	6	30
3.0000		0.8080	0.1920	0.0653	7	29
4.0000		.	.	.	8	28
4.0000		0.7523	0.2477	0.0717	9	27
5.0000		0.7245	0.2755	0.0743	10	26
6.0000		.	.	.	11	25
6.0000		0.6687	0.3313	0.0783	12	24
9.0000	*	.	.	.	12	23
10.0000	*	.	.	.	12	22
13.0000	*	.	.	.	12	21
17.0000		.	.	.	13	20
17.0000		0.6050	0.3950	0.0828	14	19
18.0000	*	.	.	.	14	18
22.0000		0.5714	0.4286	0.0848	15	17
22.0000	*	.	.	.	15	16
24.0000		0.5357	0.4643	0.0867	16	15
25.0000	*	.	.	.	16	14
25.0000	*	.	.	.	16	13
25.0000	*	.	.	.	16	12
26.0000		0.4911	0.5089	0.0902	17	11
38.0000		0.4464	0.5536	0.0924	18	10
38.0000	*	.	.	.	18	9
41.0000	*	.	.	.	18	8
41.0000	*	.	.	.	18	7
44.0000	*	.	.	.	18	6

## Check PH assumptions using log(-log)

### The LIFETEST Procedure

Stratum 3: treatment = 2

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
45.0000	*	.	.	.	18	5
46.0000	*	.	.	.	18	4
49.0000	*	.	.	.	18	3
50.0000	*	.	.	.	18	2
54.0000	*	.	.	.	18	1
59.0000	*	.	.	.	18	0

**Note:** The marked survival times are censored observations.

### Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	.	.
50	26.0000	LOGLOG	6.0000	.
25	5.0000	LOGLOG	2.0000	17.0000

Mean	Standard Error
23.5565	2.7247

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

Summary of the Number of Censored and Uncensored Values					
Stratum	treatment	Total	Failed	Censored	Percent Censored
1	0	48	29	19	39.58
2	1	32	15	17	53.13
3	2	38	18	20	52.63
Total		118	62	56	47.46

## Check PH assumptions using log(-log)

### The LIFETEST Procedure

#### Testing Homogeneity of Survival Curves for time over Strata

Rank Statistics		
treatment	Log-Rank	Wilcoxon
0	5.3678	308.00
1	-2.2408	-144.00
2	-3.1271	-164.00

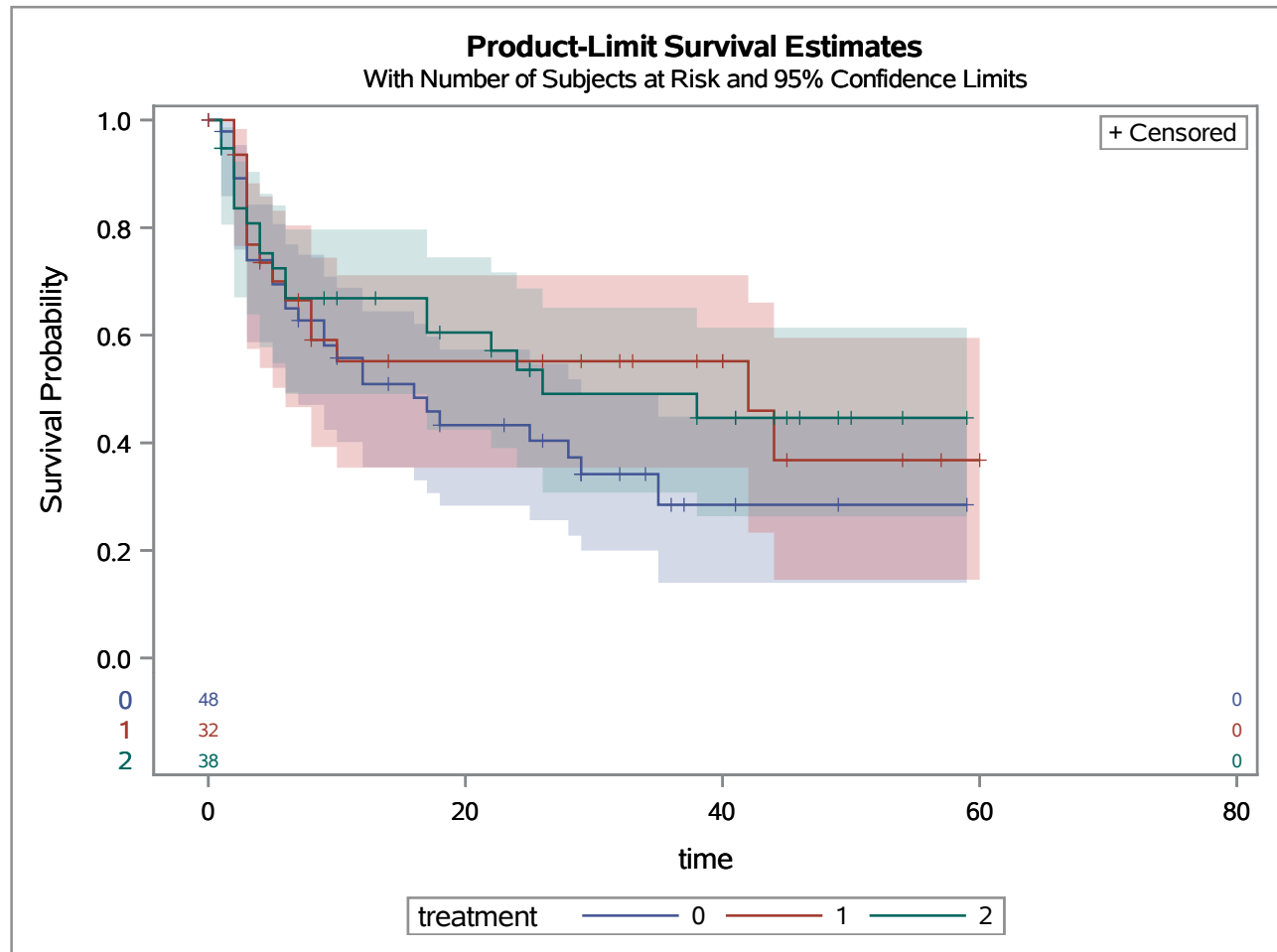
Covariance Matrix for the Log-Rank Statistics			
treatment	0	1	2
0	13.6081	-6.1127	-7.4953
1	-6.1127	11.7371	-5.6244
2	-7.4953	-5.6244	13.1197

Covariance Matrix for the Wilcoxon Statistics			
treatment	0	1	2
0	96233.1	-44152.0	-52081.2
1	-44152.0	79417.1	-35265.1
2	-52081.2	-35265.1	87346.3

Test of Equality over Strata			
Test	Chi-Square	DF	Pr > Chi-Square
Log-Rank	2.1206	2	0.3463
Wilcoxon	0.9859	2	0.6108
-2Log(LR)	3.9311	2	0.1401

# Check PH assumptions using log(-log)

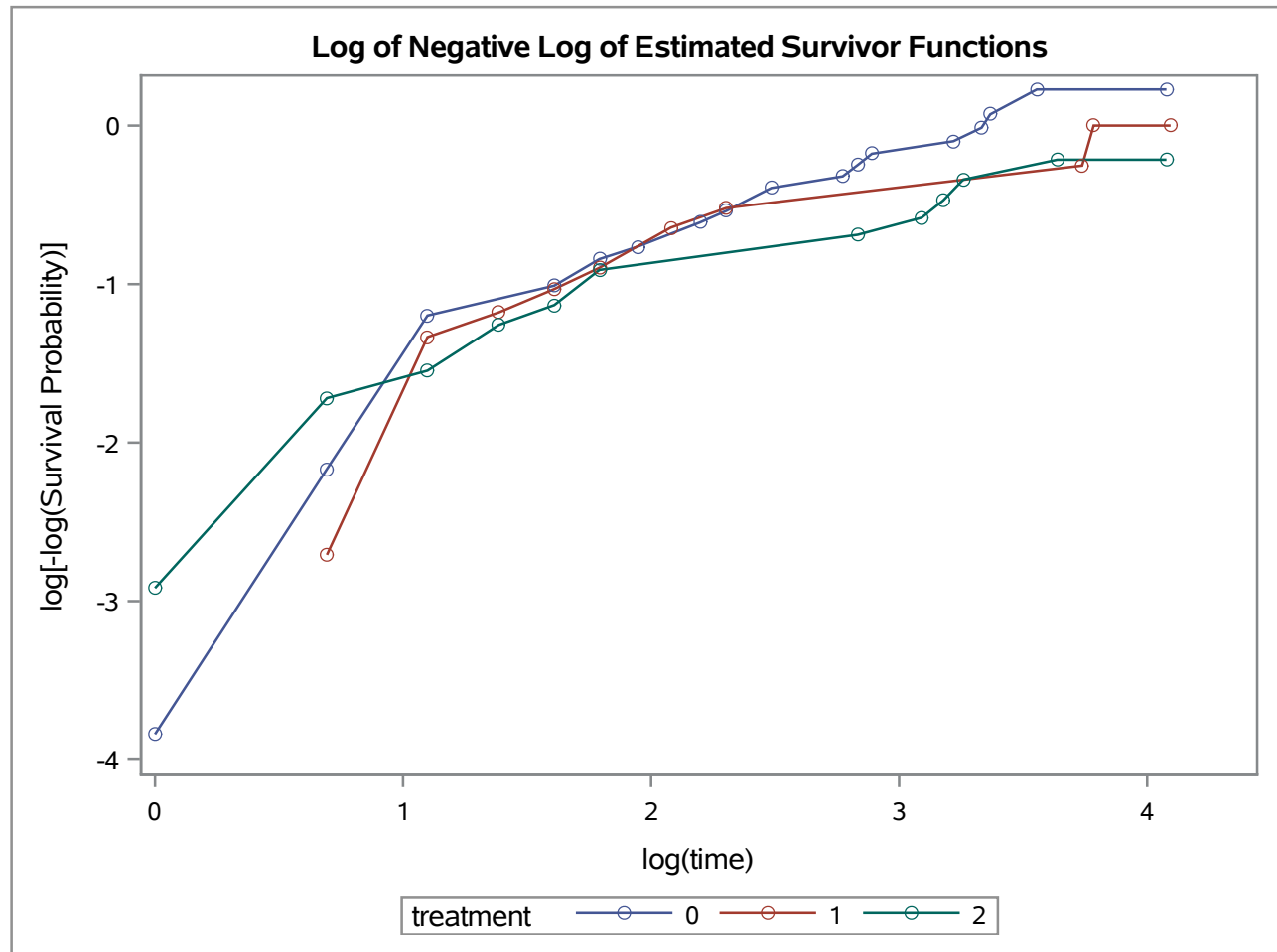
## The LIFETEST Procedure





## Check PH assumptions using log(-log)

## The LIFETEST Procedure



# Check PH assumptions by plotting observed vs. fitted

## The PHREG Procedure

Model Information		
Data Set	WORK.B1	
Dependent Variable	time	
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	EFRON	

Number of Observations Read	118
Number of Observations Used	118

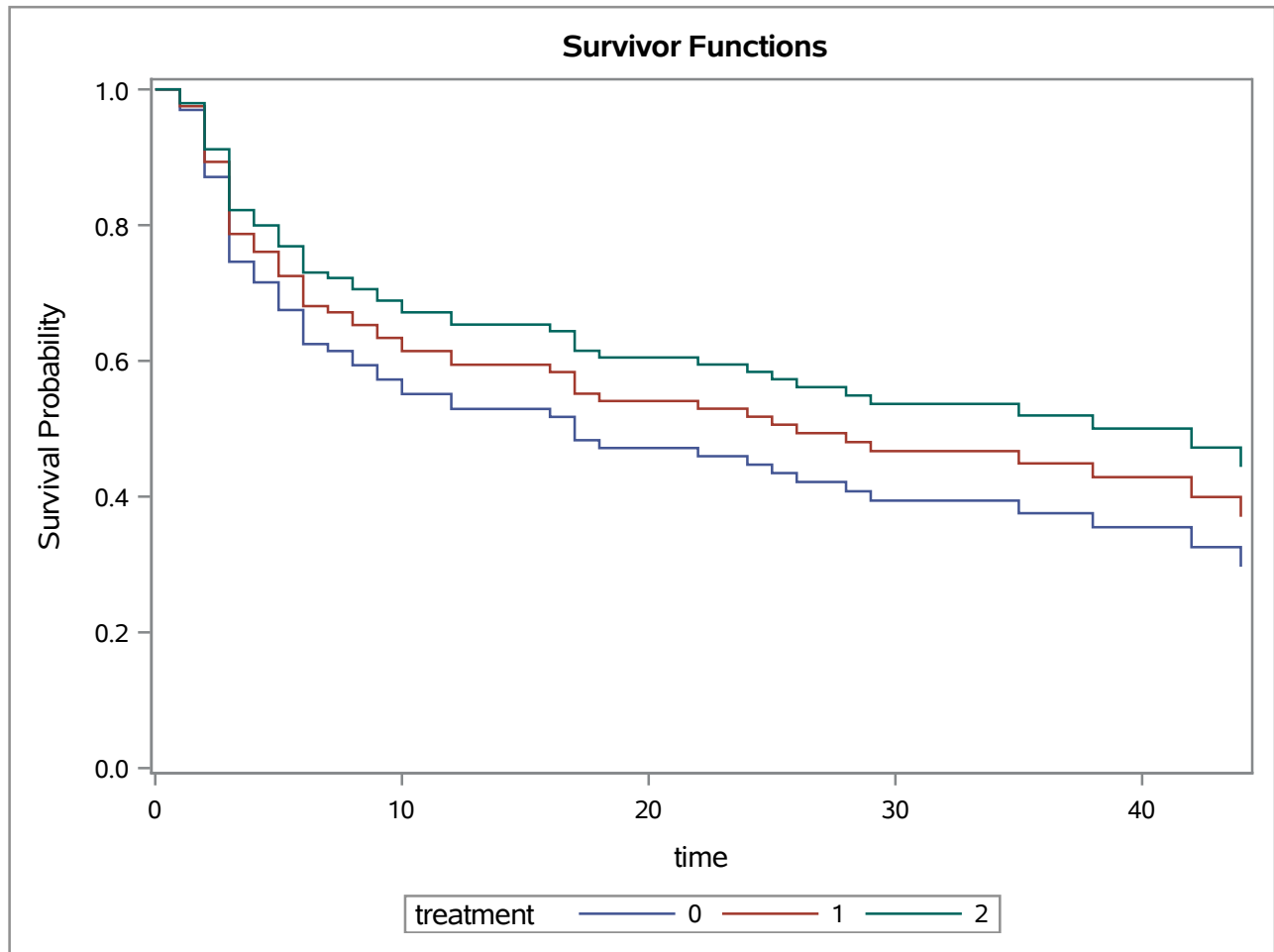
Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
118	62	56	47.46

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	526.688	524.939
AIC	526.688	526.939
SBC	526.688	529.066

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	1.7490	1	0.1860
Score	1.7340	1	0.1879
Wald	1.7207	1	0.1896

Analysis of Maximum Likelihood Estimates									
Parameter	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits		Label
treatment	1	-0.20131	0.15347	1.7207	0.1896	0.818	0.605	1.105	treatment

**Check PH assumptions by plotting observed vs. fitted****The PHREG Procedure**

**Check PH assumptions by plotting observed vs. fitted****The LIFETEST Procedure****Stratum 1: treatment = 0**

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	48
0.0000	*	.	.	.	0	47
1.0000		0.9787	0.0213	0.0210	1	46
1.0000	*	.	.	.	1	45
2.0000		.	.	.	2	44
2.0000		.	.	.	3	43
2.0000		.	.	.	4	42
2.0000		0.8917	0.1083	0.0457	5	41
3.0000		.	.	.	6	40
3.0000		.	.	.	7	39
3.0000		.	.	.	8	38
3.0000		.	.	.	9	37
3.0000		.	.	.	10	36
3.0000		.	.	.	11	35
3.0000		0.7395	0.2605	0.0647	12	34
4.0000	*	.	.	.	12	33
5.0000		.	.	.	13	32
5.0000		0.6947	0.3053	0.0681	14	31
6.0000		.	.	.	15	30
6.0000		0.6498	0.3502	0.0707	16	29
7.0000		0.6274	0.3726	0.0717	17	28
7.0000	*	.	.	.	17	27
9.0000		.	.	.	18	26
9.0000		0.5810	0.4190	0.0735	19	25
10.0000		0.5577	0.4423	0.0742	20	24
10.0000	*	.	.	.	20	23
12.0000		.	.	.	21	22
12.0000		0.5092	0.4908	0.0752	22	21
14.0000	*	.	.	.	22	20
16.0000		0.4838	0.5162	0.0757	23	19
17.0000		0.4583	0.5417	0.0758	24	18
18.0000		0.4328	0.5672	0.0758	25	17
18.0000	*	.	.	.	25	16

# Check PH assumptions by plotting observed vs. fitted

## The LIFETEST Procedure

Stratum 1: treatment = 0

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
23.0000	*	.	.	.	25	15
25.0000		0.4040	0.5960	0.0760	26	14
26.0000	*	.	.	.	26	13
28.0000		0.3729	0.6271	0.0763	27	12
29.0000		0.3418	0.6582	0.0760	28	11
29.0000	*	.	.	.	28	10
29.0000	*	.	.	.	28	9
29.0000	*	.	.	.	28	8
32.0000	*	.	.	.	28	7
34.0000	*	.	.	.	28	6
35.0000		0.2849	0.7151	0.0819	29	5
36.0000	*	.	.	.	29	4
37.0000	*	.	.	.	29	3
41.0000	*	.	.	.	29	2
49.0000	*	.	.	.	29	1
59.0000	*	.	.	.	29	0

**Note:** The marked survival times are censored observations.

## Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	28.0000	.
50	16.0000	LOGLOG	6.0000	29.0000
25	3.0000	LOGLOG	3.0000	7.0000

Mean	Standard Error
18.2899	2.1377

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

**Check PH assumptions by plotting observed vs. fitted****The LIFETEST Procedure****Stratum 2: treatment = 1**

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	32
0.0000	*	.	.	.	0	31
2.0000		.	.	.	1	30
2.0000		0.9355	0.0645	0.0441	2	29
2.0000	*	.	.	.	2	28
3.0000		.	.	.	3	27
3.0000		.	.	.	4	26
3.0000		.	.	.	5	25
3.0000		.	.	.	6	24
3.0000		0.7684	0.2316	0.0768	7	23
4.0000		0.7350	0.2650	0.0804	8	22
4.0000	*	.	.	.	8	21
5.0000		0.7000	0.3000	0.0838	9	20
6.0000		0.6650	0.3350	0.0867	10	19
7.0000	*	.	.	.	10	18
8.0000		.	.	.	11	17
8.0000		0.5911	0.4089	0.0914	12	16
8.0000	*	.	.	.	12	15
10.0000		0.5517	0.4483	0.0934	13	14
14.0000	*	.	.	.	13	13
26.0000	*	.	.	.	13	12
29.0000	*	.	.	.	13	11
32.0000	*	.	.	.	13	10
33.0000	*	.	.	.	13	9
38.0000	*	.	.	.	13	8
40.0000	*	.	.	.	13	7
40.0000	*	.	.	.	13	6
42.0000		0.4598	0.5402	0.1145	14	5
44.0000		0.3678	0.6322	0.1231	15	4
45.0000	*	.	.	.	15	3
54.0000	*	.	.	.	15	2
57.0000	*	.	.	.	15	1
60.0000	*	.	.	.	15	0

## Check PH assumptions by plotting observed vs. fitted

### The LIFETEST Procedure

Stratum 2: treatment = 1

**Note:** The marked survival times are censored observations.

#### Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	42.0000	.
50	42.0000	LOGLOG	6.0000	.
25	4.0000	LOGLOG	3.0000	8.0000

Mean	Standard Error
26.2259	3.7609

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

**Check PH assumptions by plotting observed vs. fitted****The LIFETEST Procedure****Stratum 3: treatment = 2**

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.0000		1.0000	0	0	0	38
1.0000		.	.	.	1	37
1.0000		0.9474	0.0526	0.0362	2	36
1.0000	*	.	.	.	2	35
1.0000	*	.	.	.	2	34
2.0000		.	.	.	3	33
2.0000		.	.	.	4	32
2.0000		.	.	.	5	31
2.0000		0.8359	0.1641	0.0613	6	30
3.0000		0.8080	0.1920	0.0653	7	29
4.0000		.	.	.	8	28
4.0000		0.7523	0.2477	0.0717	9	27
5.0000		0.7245	0.2755	0.0743	10	26
6.0000		.	.	.	11	25
6.0000		0.6687	0.3313	0.0783	12	24
9.0000	*	.	.	.	12	23
10.0000	*	.	.	.	12	22
13.0000	*	.	.	.	12	21
17.0000		.	.	.	13	20
17.0000		0.6050	0.3950	0.0828	14	19
18.0000	*	.	.	.	14	18
22.0000		0.5714	0.4286	0.0848	15	17
22.0000	*	.	.	.	15	16
24.0000		0.5357	0.4643	0.0867	16	15
25.0000	*	.	.	.	16	14
25.0000	*	.	.	.	16	13
25.0000	*	.	.	.	16	12
26.0000		0.4911	0.5089	0.0902	17	11
38.0000		0.4464	0.5536	0.0924	18	10
38.0000	*	.	.	.	18	9
41.0000	*	.	.	.	18	8
41.0000	*	.	.	.	18	7
44.0000	*	.	.	.	18	6



## Check PH assumptions by plotting observed vs. fitted

### The LIFETEST Procedure

Stratum 3: treatment = 2

Product-Limit Survival Estimates						
time		Survival	Failure	Survival Standard Error	Number Failed	Number Left
45.0000	*	.	.	.	18	5
46.0000	*	.	.	.	18	4
49.0000	*	.	.	.	18	3
50.0000	*	.	.	.	18	2
54.0000	*	.	.	.	18	1
59.0000	*	.	.	.	18	0

**Note:** The marked survival times are censored observations.

### Summary Statistics for Time Variable time

Quartile Estimates				
Percent	Point Estimate	95% Confidence Interval		
		Transform	[Lower	Upper)
75	.	LOGLOG	.	.
50	26.0000	LOGLOG	6.0000	.
25	5.0000	LOGLOG	2.0000	17.0000

Mean	Standard Error
23.5565	2.7247

**Note:** The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

Summary of the Number of Censored and Uncensored Values					
Stratum	treatment	Total	Failed	Censored	Percent Censored
1	0	48	29	19	39.58
2	1	32	15	17	53.13
3	2	38	18	20	52.63
Total		118	62	56	47.46

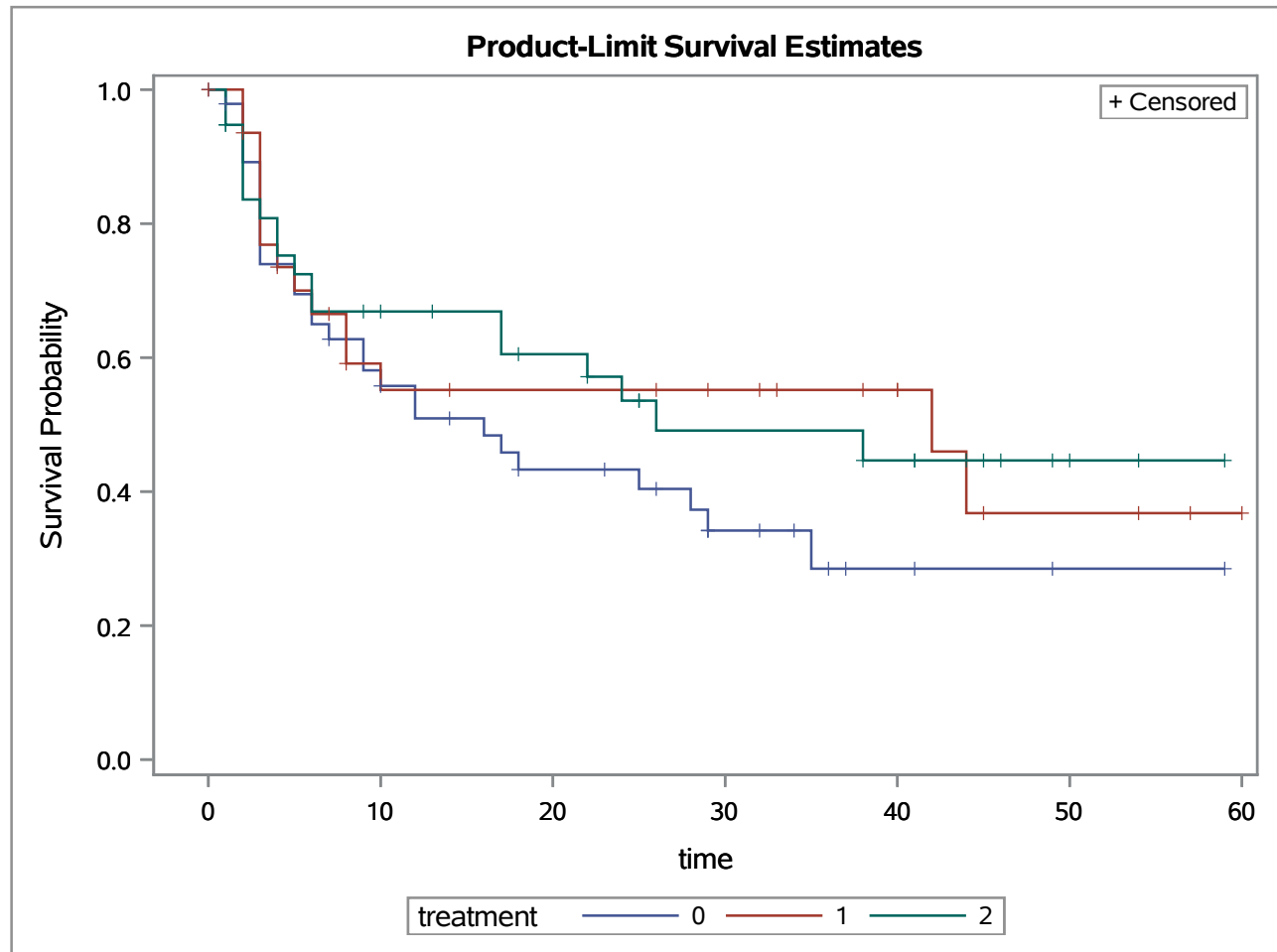
**Check PH assumptions by plotting observed vs. fitted****The LIFETEST Procedure****Testing Homogeneity of Survival Curves for time over Strata**

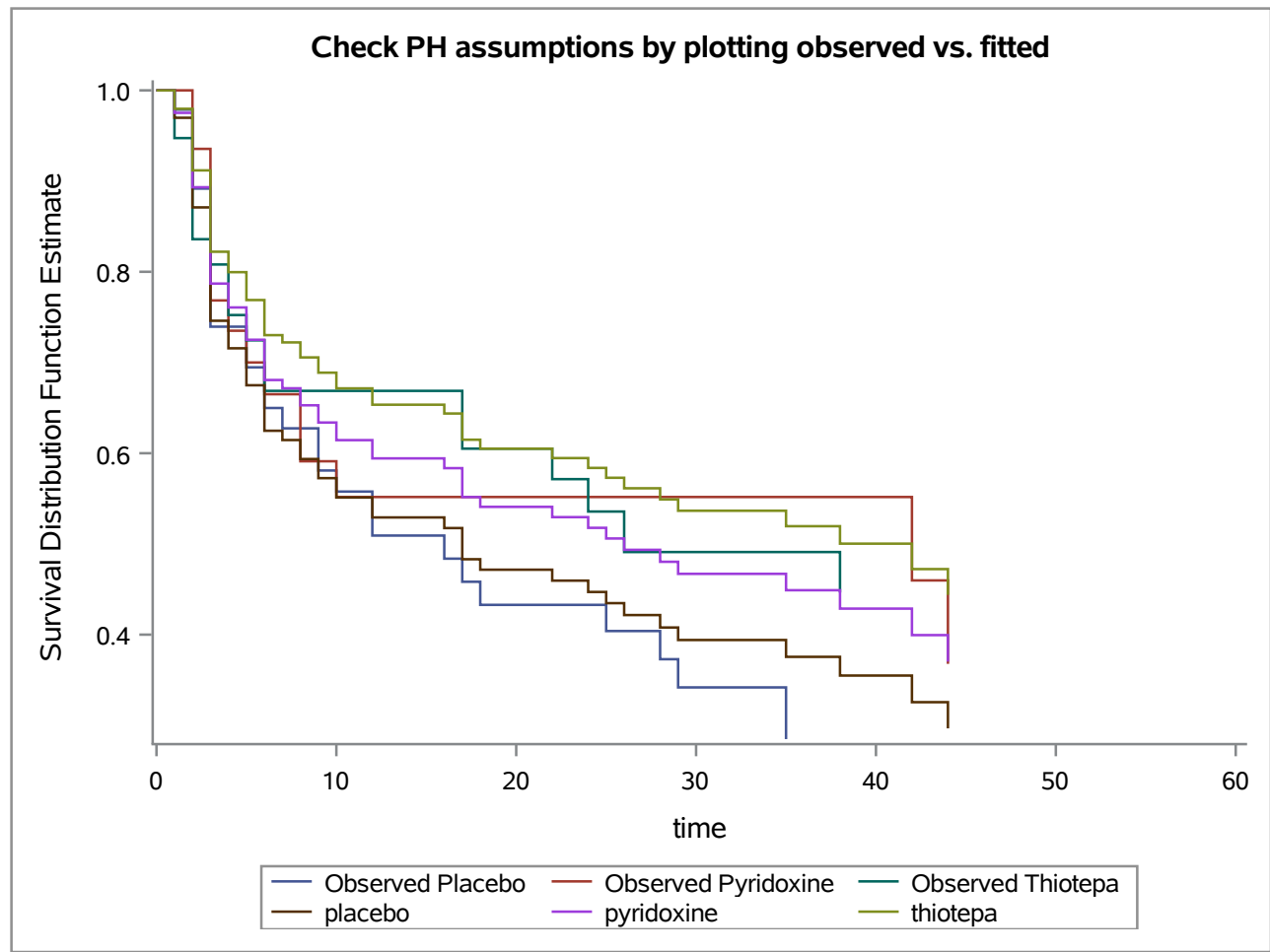
Rank Statistics		
treatment	Log-Rank	Wilcoxon
0	5.3678	308.00
1	-2.2408	-144.00
2	-3.1271	-164.00

Covariance Matrix for the Log-Rank Statistics			
treatment	0	1	2
0	13.6081	-6.1127	-7.4953
1	-6.1127	11.7371	-5.6244
2	-7.4953	-5.6244	13.1197

Covariance Matrix for the Wilcoxon Statistics			
treatment	0	1	2
0	96233.1	-44152.0	-52081.2
1	-44152.0	79417.1	-35265.1
2	-52081.2	-35265.1	87346.3

Test of Equality over Strata			
Test	Chi-Square	DF	Pr > Chi-Square
Log-Rank	2.1206	2	0.3463
Wilcoxon	0.9859	2	0.6108
-2Log(LR)	3.9311	2	0.1401

**Check PH assumptions by plotting observed vs. fitted****The LIFETEST Procedure**



# Check PH assumptions using Schoenfeld Residuals

## The PHREG Procedure

Model Information		
Data Set	WORK.B1	
Dependent Variable	time	
Censoring Variable	status	status
Censoring Value(s)	0	
Ties Handling	BRESLOW	

Number of Observations Read	118
Number of Observations Used	118

Class Level Information			
Class	Value	Design Variables	
treatment	0	0	0
	1	1	0
	2	0	1

Summary of the Number of Event and Censored Values			
Total	Event	Censored	Percent Censored
118	62	56	47.46

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	529.956	515.477
AIC	529.956	523.477
SBC	529.956	531.986

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	14.4789	4	0.0059
Score	17.1586	4	0.0018
Wald	16.0508	4	0.0030

## Check PH assumptions using Schoenfeld Residuals

### The PHREG Procedure

Type 3 Tests			
Effect	DF	Wald Chi-Square	Pr > ChiSq
treatment	2	3.2047	0.2014
size	1	0.5521	0.4575
number	1	14.6858	0.0001

Analysis of Maximum Likelihood Estimates								
Parameter		DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Label
treatment	1	1	-0.34332	0.32242	1.1339	0.2869	0.709	treatment 1
treatment	2	1	-0.54030	0.31258	2.9877	0.0839	0.583	treatment 2
size		1	0.05506	0.07410	0.5521	0.4575	1.057	size
number		1	0.24975	0.06517	14.6858	0.0001	1.284	number

Plot Schoenfeld residual with variable = number

## Check PH assumptions using Schoenfeld Residuals

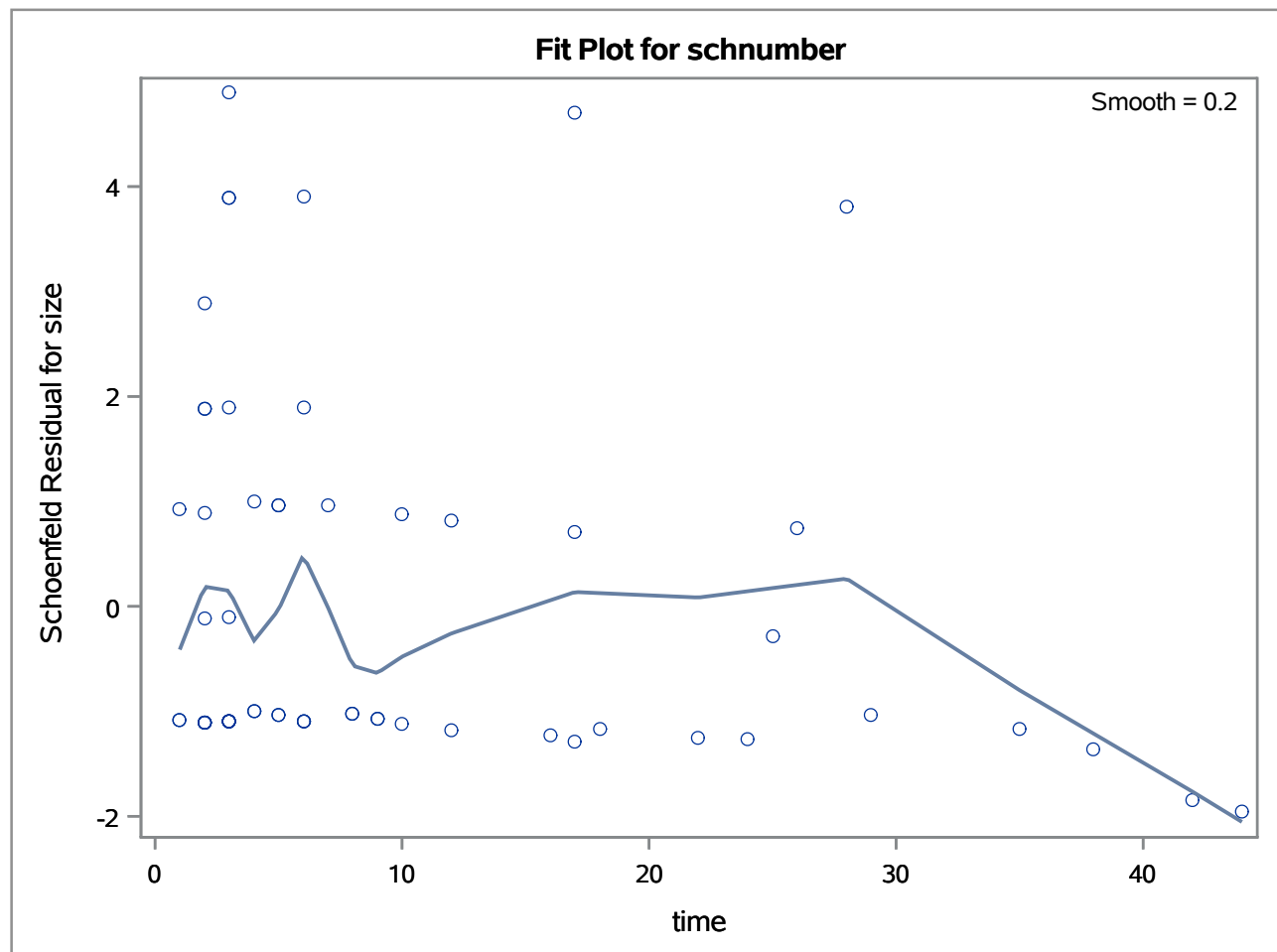
### The LOESS Procedure

Independent Variable Scaling	
Scaling applied: None	
Statistic	time
Minimum Value	1.00000
Maximum Value	44.00000

## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schnumber

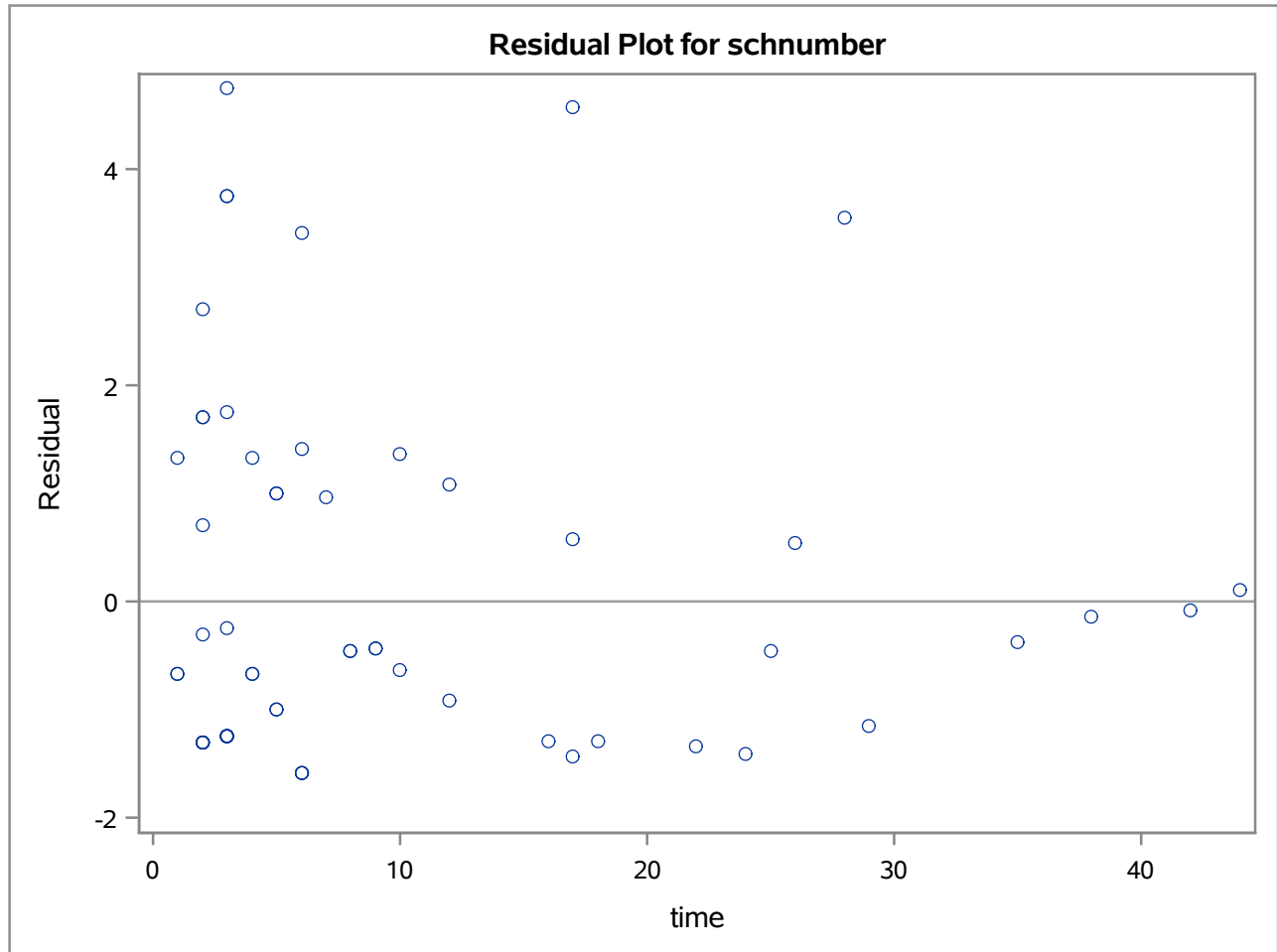
Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	18
kd Tree Bucket Size	2
Degree of Local Polynomials	1
Smoothing Parameter	0.20000
Points in Local Neighborhood	12
Residual Sum of Squares	169.91904





## Check PH assumptions using Schoenfeld Residuals

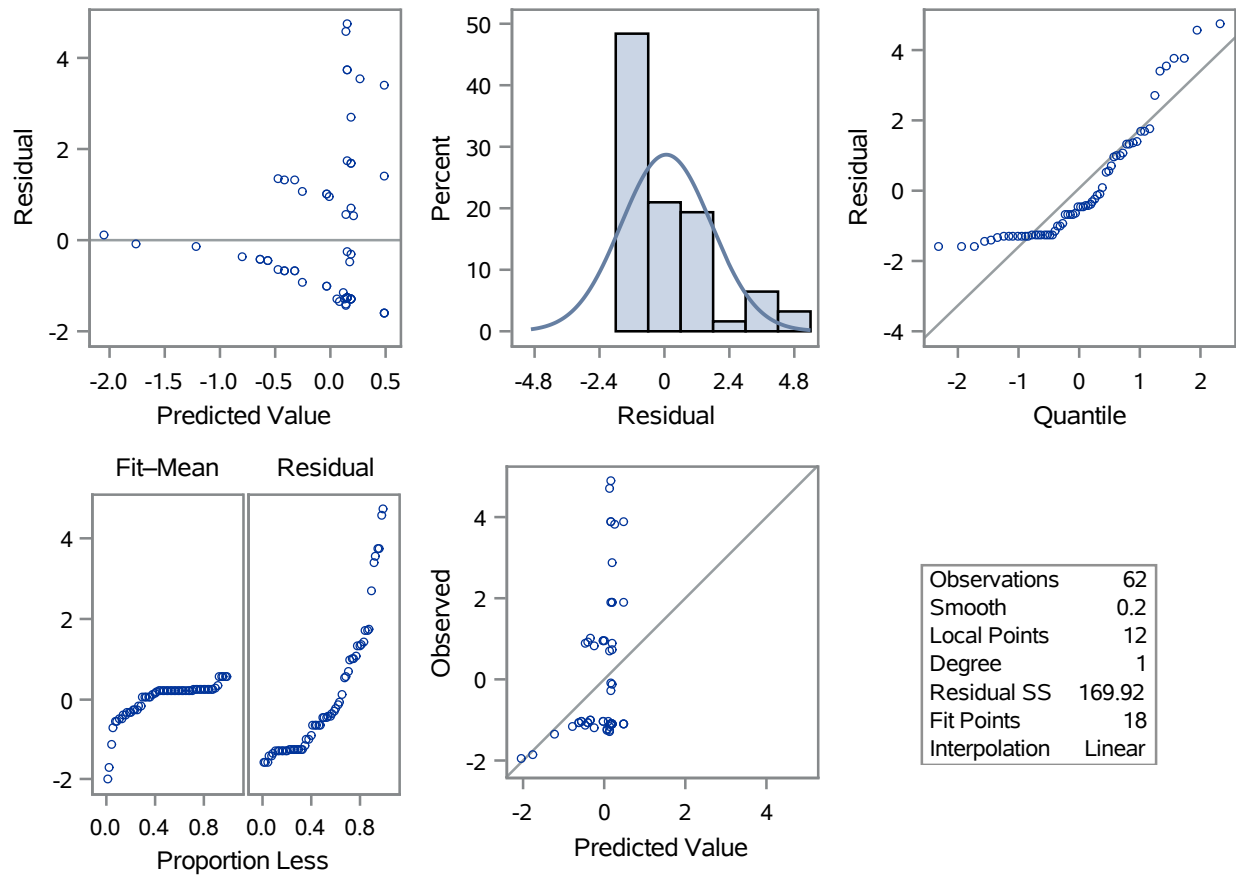
The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schnumber



# Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schnumber

Fit Diagnostics for schnumber

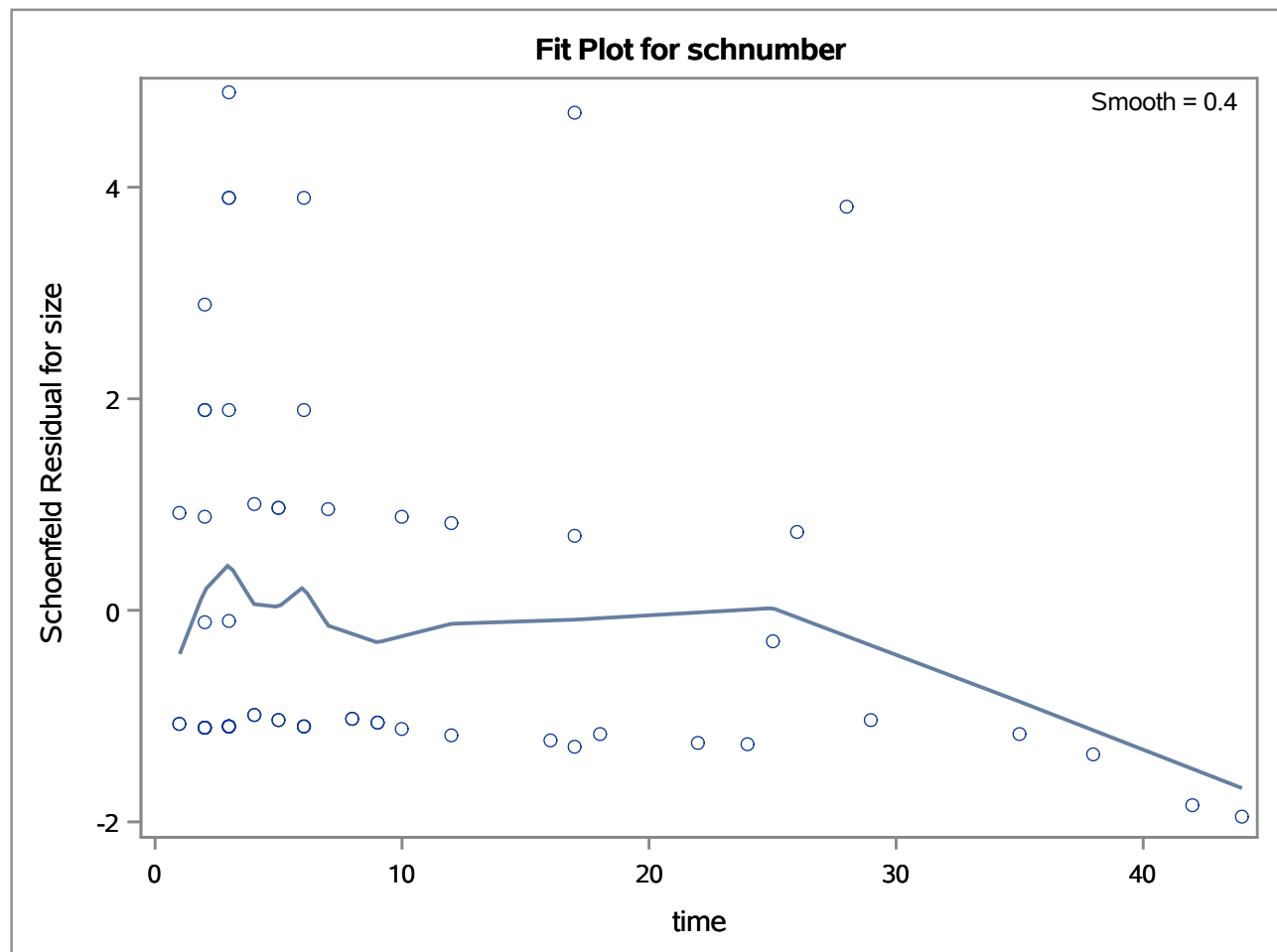


Observations	62
Smooth	0.2
Local Points	12
Degree	1
Residual SS	169.92
Fit Points	18
Interpolation	Linear

## Check PH assumptions using Schoenfeld Residuals

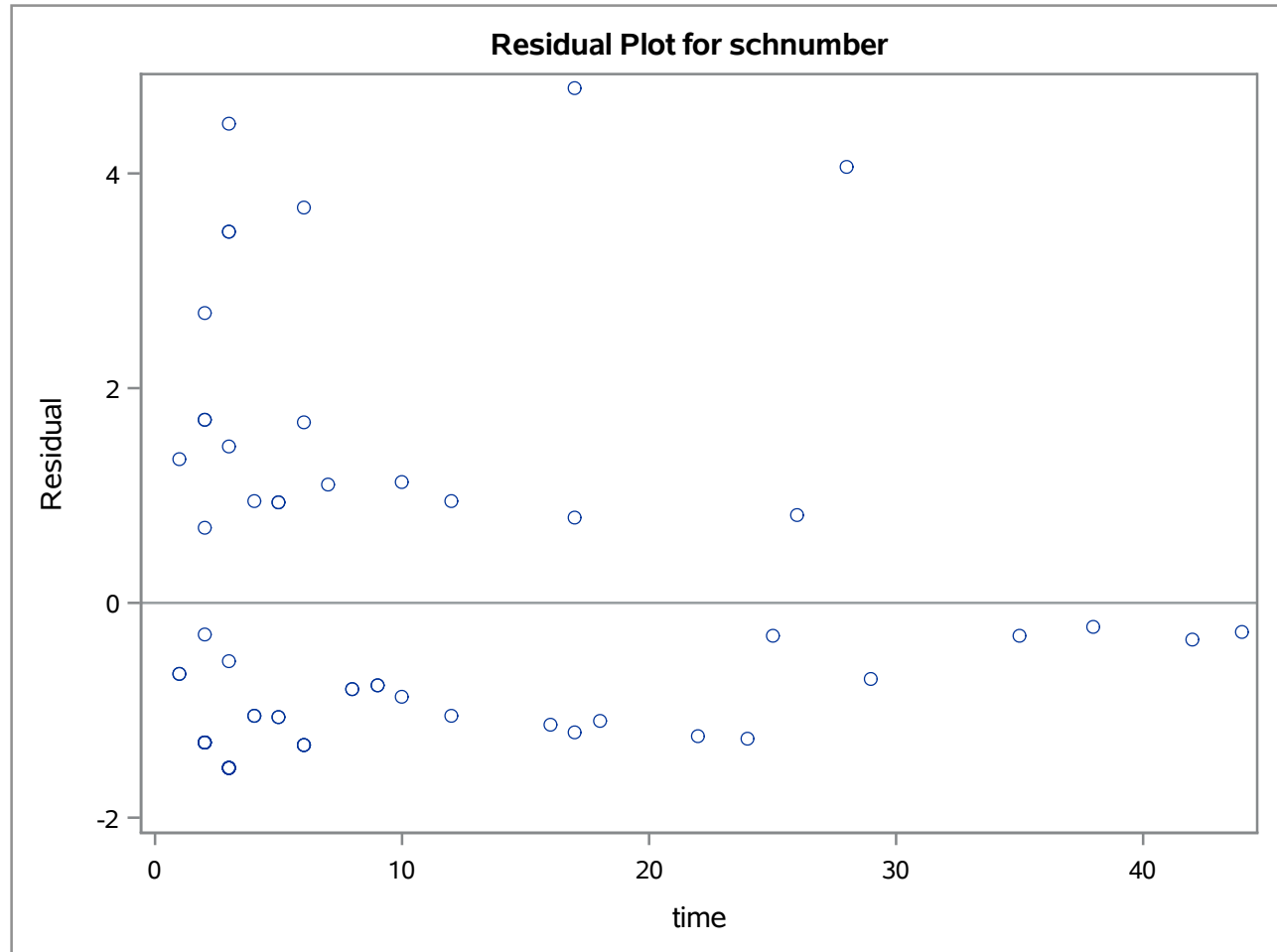
The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schnumber

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	13
kd Tree Bucket Size	4
Degree of Local Polynomials	1
Smoothing Parameter	0.40000
Points in Local Neighborhood	24
Residual Sum of Squares	175.16828



## Check PH assumptions using Schoenfeld Residuals

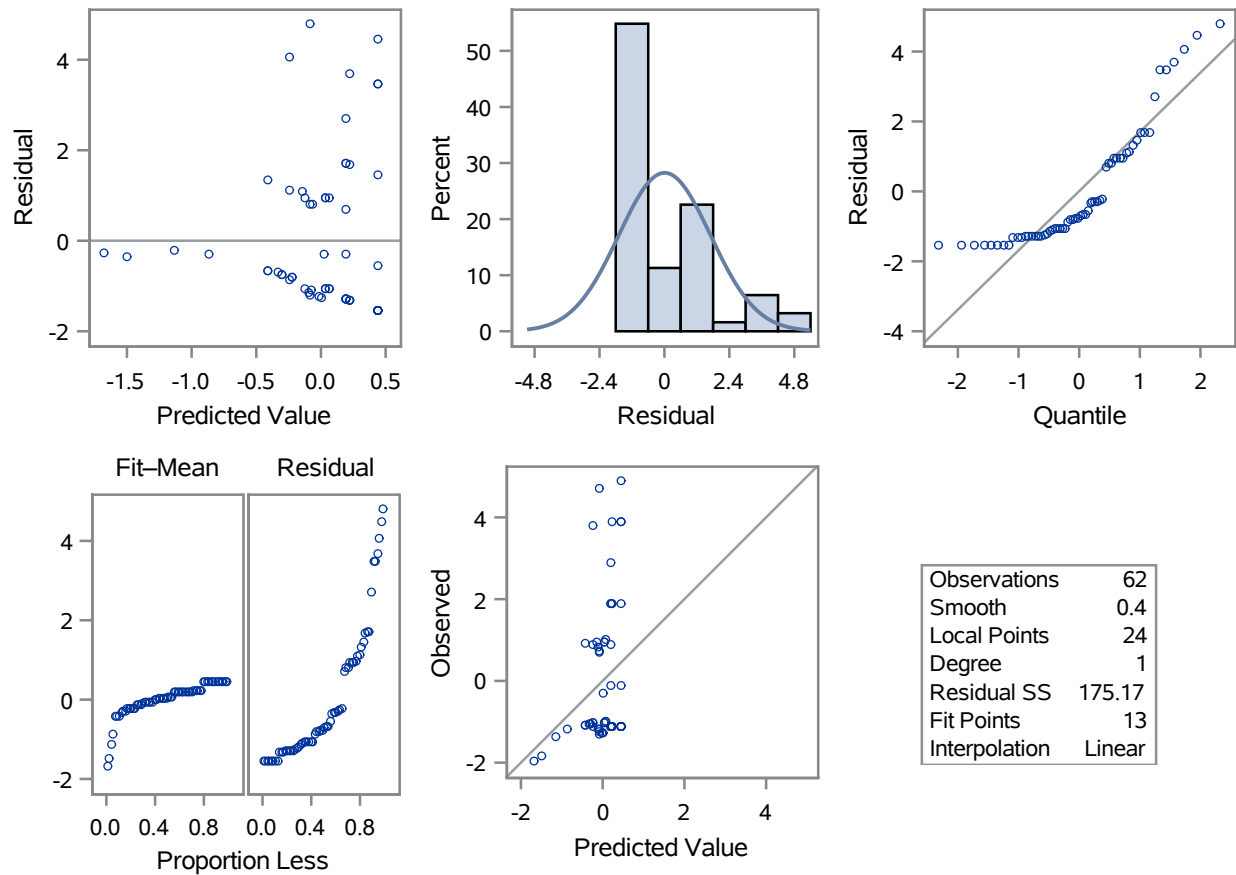
The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schnumber



## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schnumber

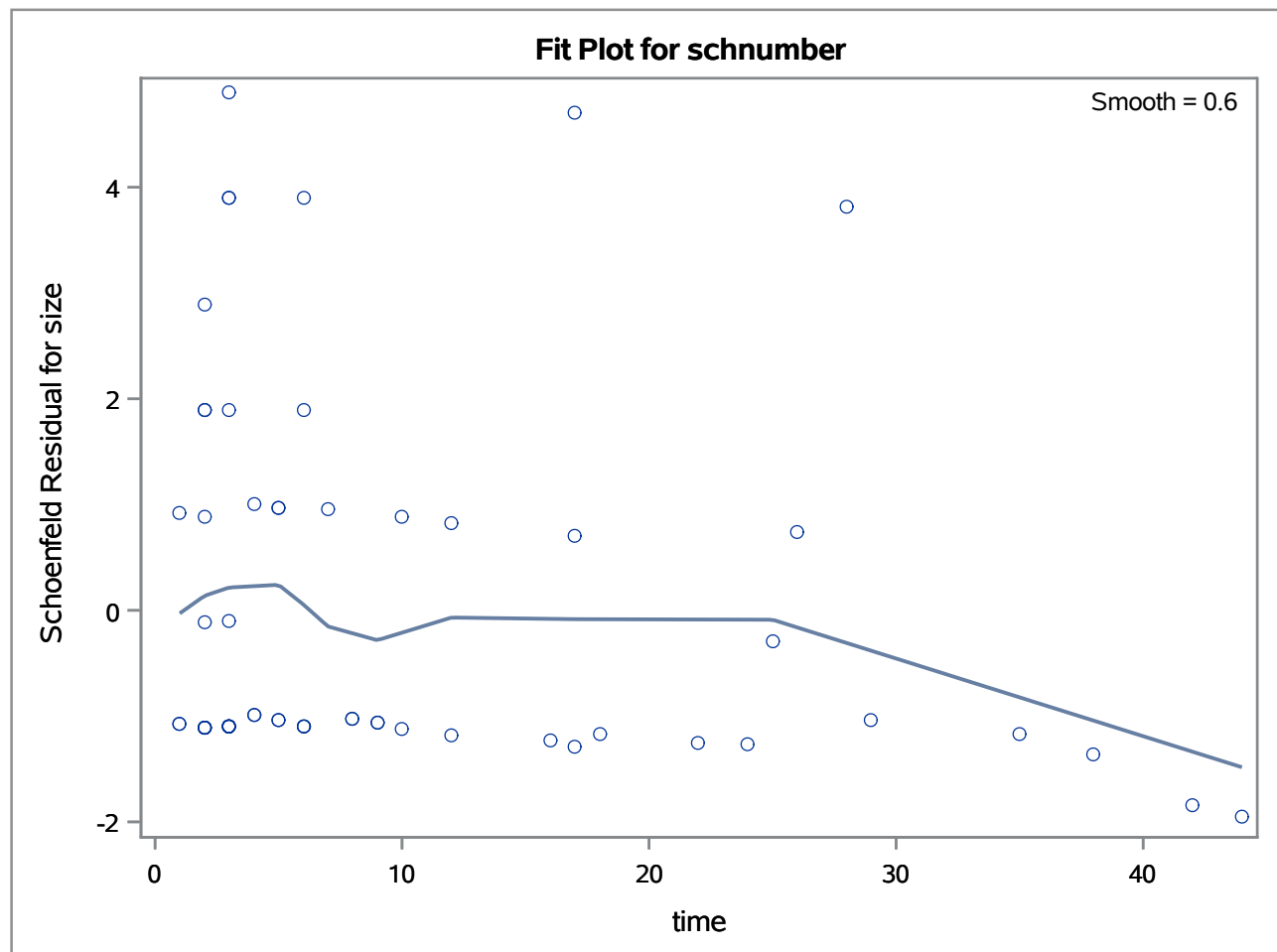
Fit Diagnostics for schnumber



## Check PH assumptions using Schoenfeld Residuals

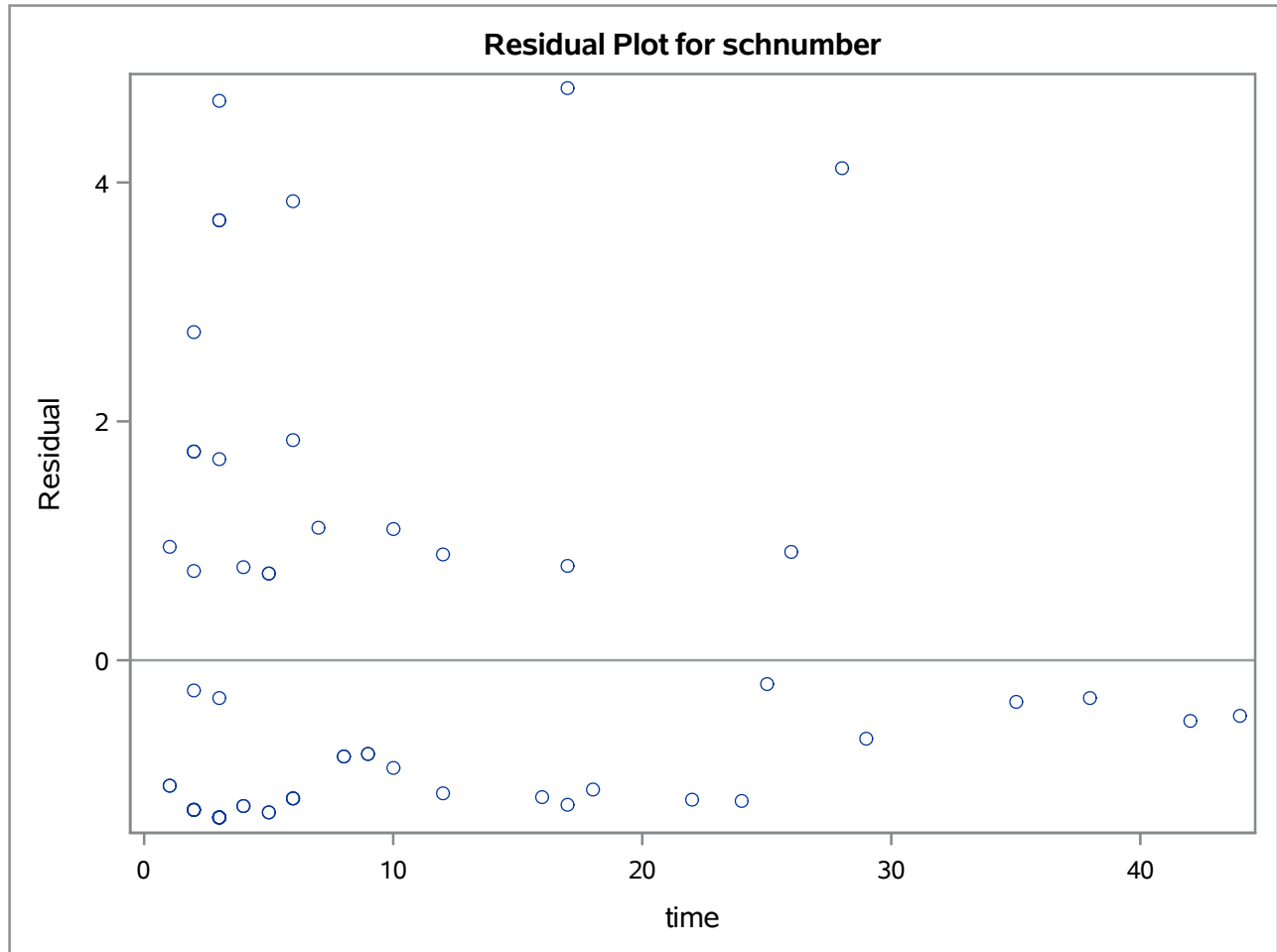
The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schnumber

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	11
kd Tree Bucket Size	7
Degree of Local Polynomials	1
Smoothing Parameter	0.60000
Points in Local Neighborhood	37
Residual Sum of Squares	178.24222



## Check PH assumptions using Schoenfeld Residuals

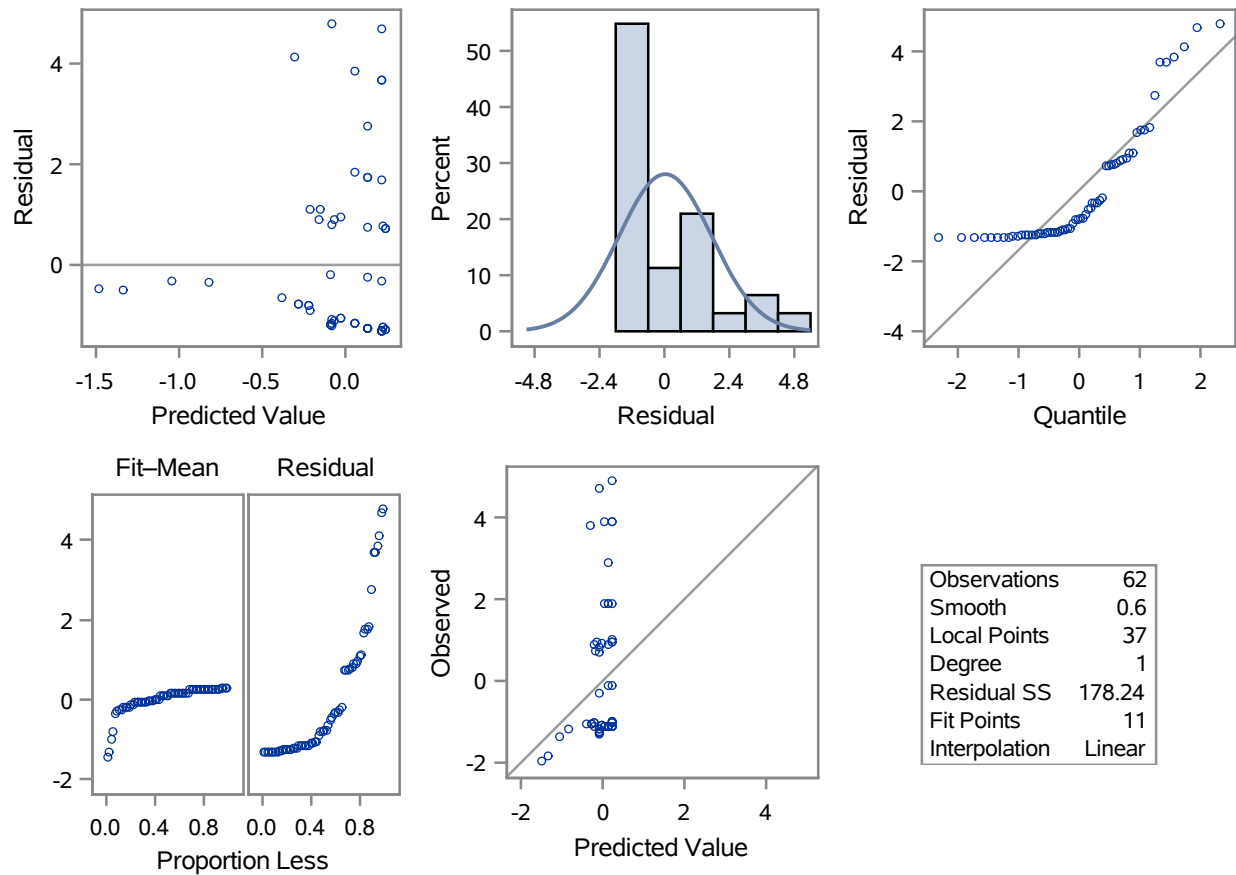
The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schnumber



## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schnumber

### Fit Diagnostics for schnumber

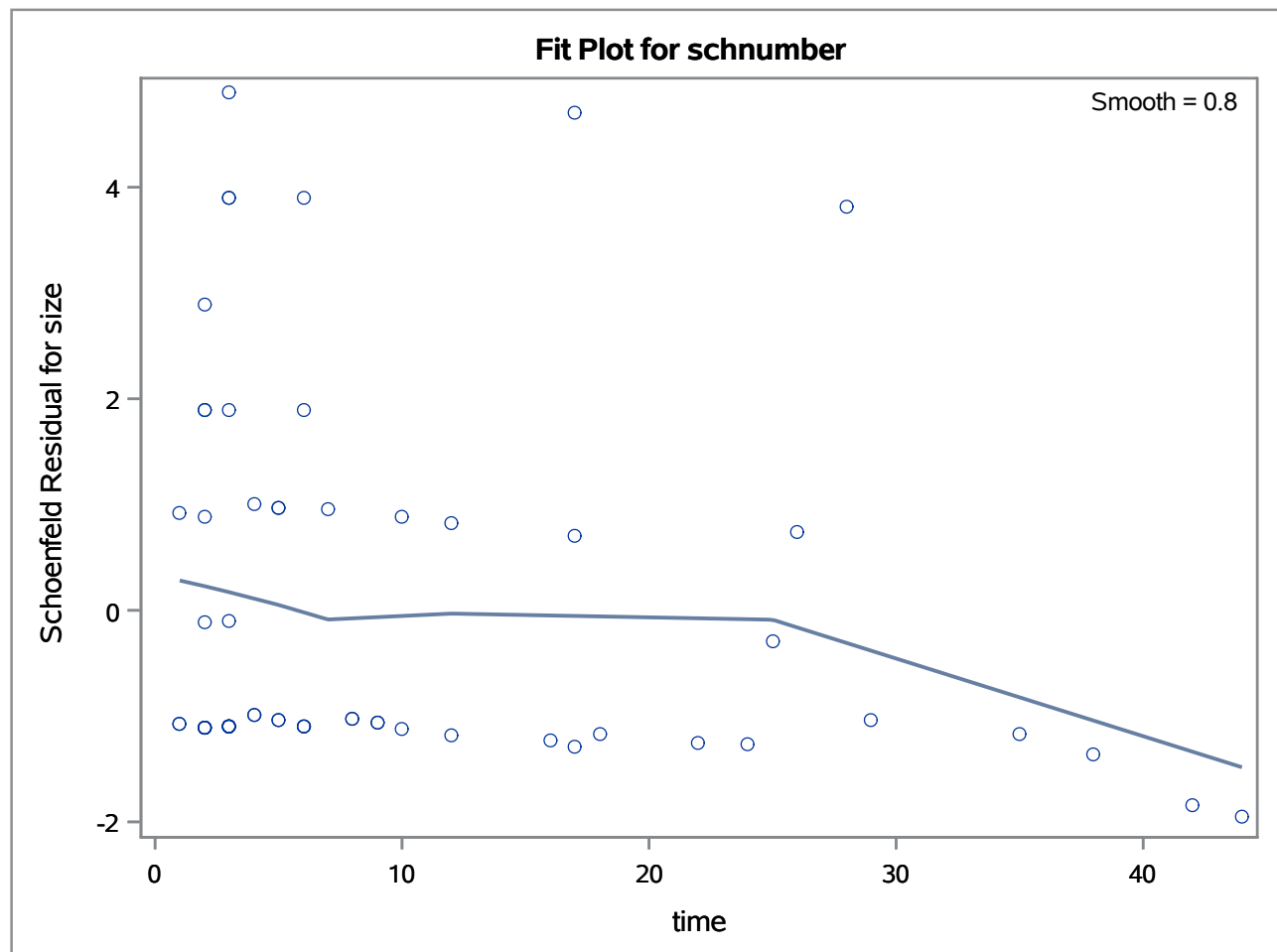




## Check PH assumptions using Schoenfeld Residuals

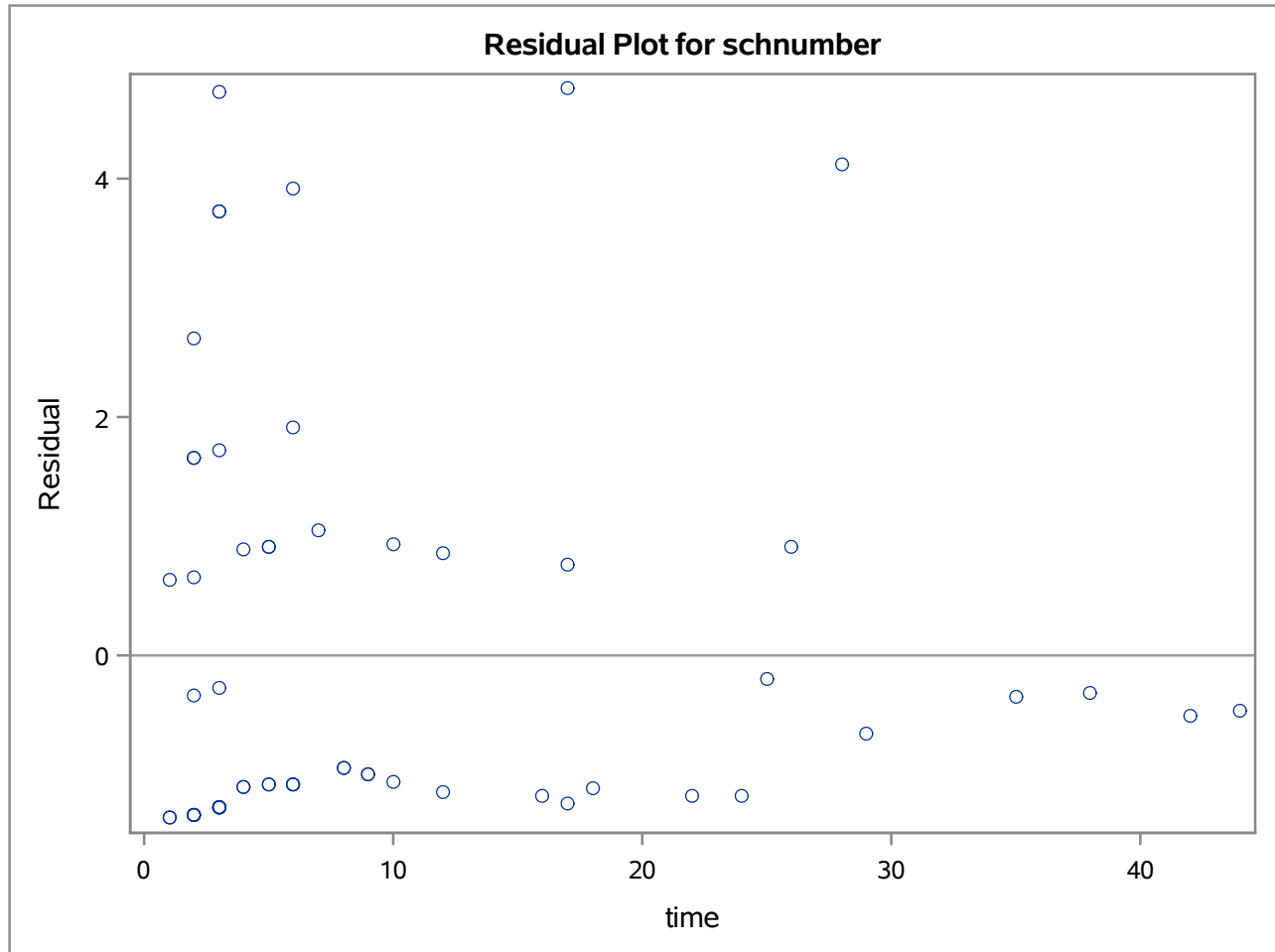
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schnumber

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	8
kd Tree Bucket Size	9
Degree of Local Polynomials	1
Smoothing Parameter	0.80000
Points in Local Neighborhood	49
Residual Sum of Squares	180.29393



## Check PH assumptions using Schoenfeld Residuals

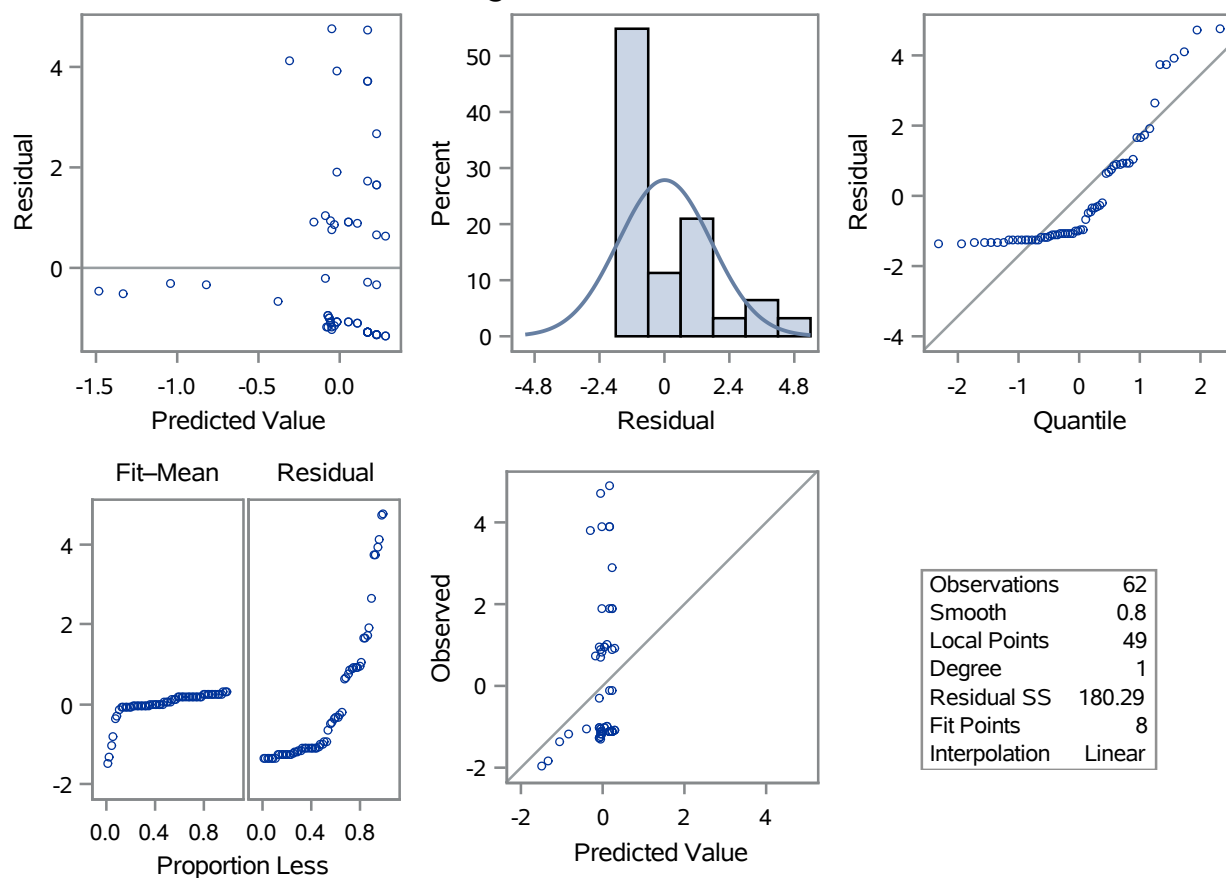
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schnumber



## Check PH assumptions using Schoenfeld Residuals

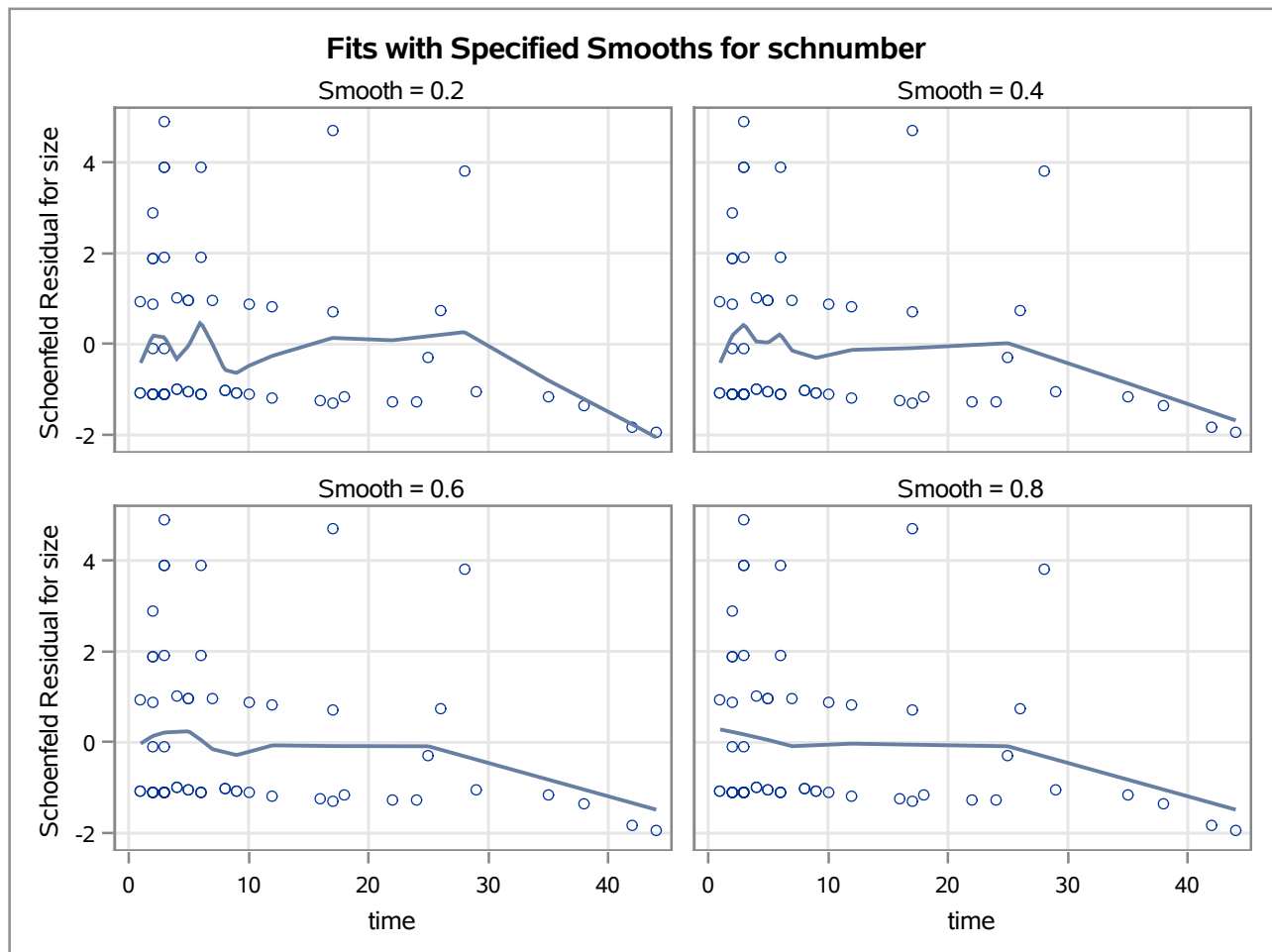
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schnumber

Fit Diagnostics for schnumber



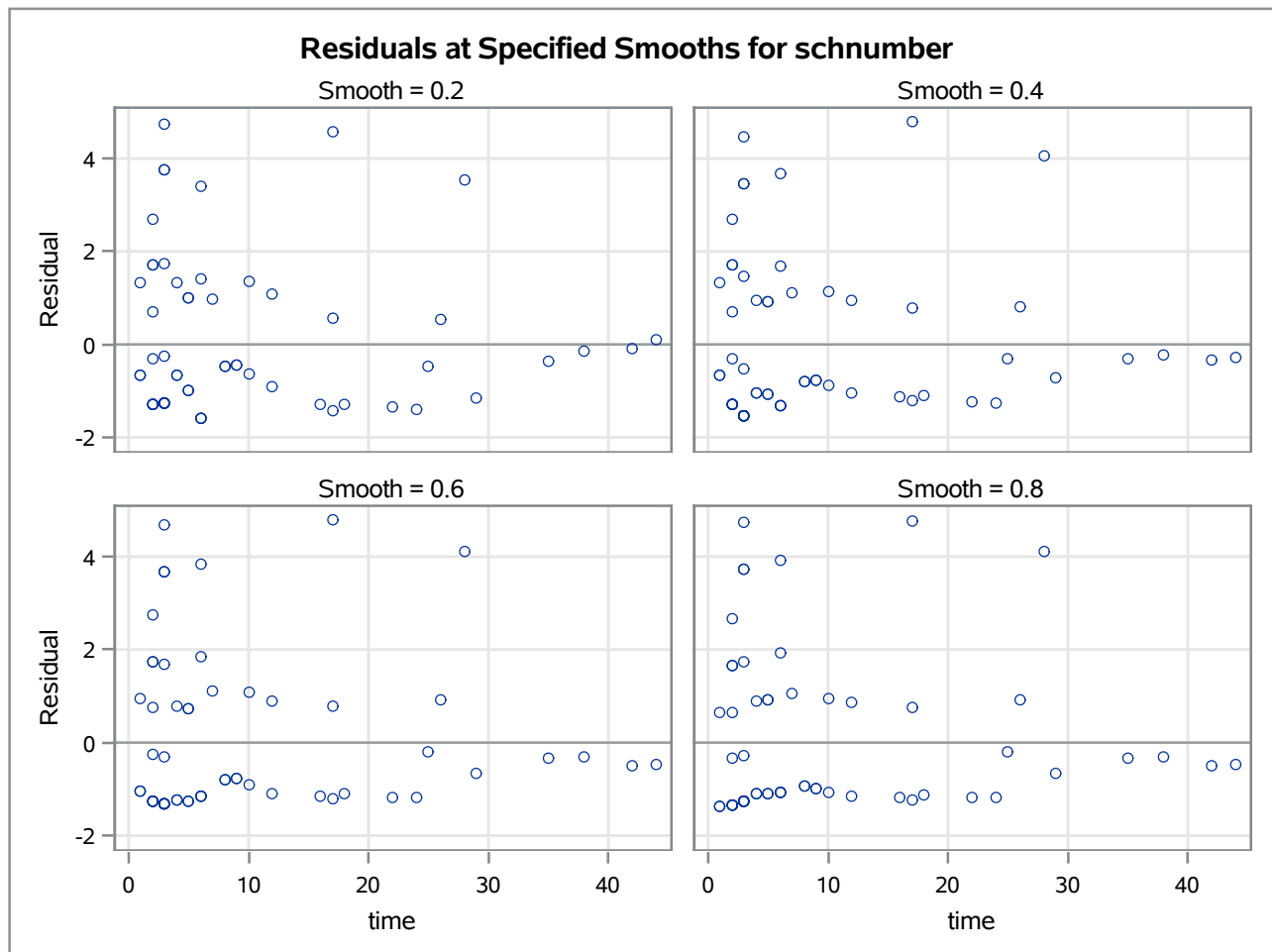
## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Dependent Variable: schnumber



## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Dependent Variable: schnumber



## Check PH assumptions using Schoenfeld Residuals

### The CORR Procedure

<b>1 With Variables:</b>	time_rank
<b>1 Variables:</b>	schnumber

Simple Statistics							
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
time_rank	118	59.50000	34.16069	7021	1.50000	118.00000	Rank for Variable time
schnumber	62	1.88019E-9	1.76119	1.16572E-7	-1.94996	4.89853	Schoenfeld Residual for size

Pearson Correlation Coefficients Prob >  r  under H0: Rho=0 Number of Observations	
	schnumber
time_rank Rank for Variable time	-0.14746 0.2527 62

## Check PH assumptions using Schoenfeld Residuals

The REG Procedure

Model: MODEL1

Dependent Variable: time\_rank Rank for Variable time

Number of Observations Read	118
Number of Observations Used	62
Number of Observations with Missing Values	56

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	913.66818	913.66818	1.33	0.2527
Error	60	41104	685.06171		
Corrected Total	61	42017			

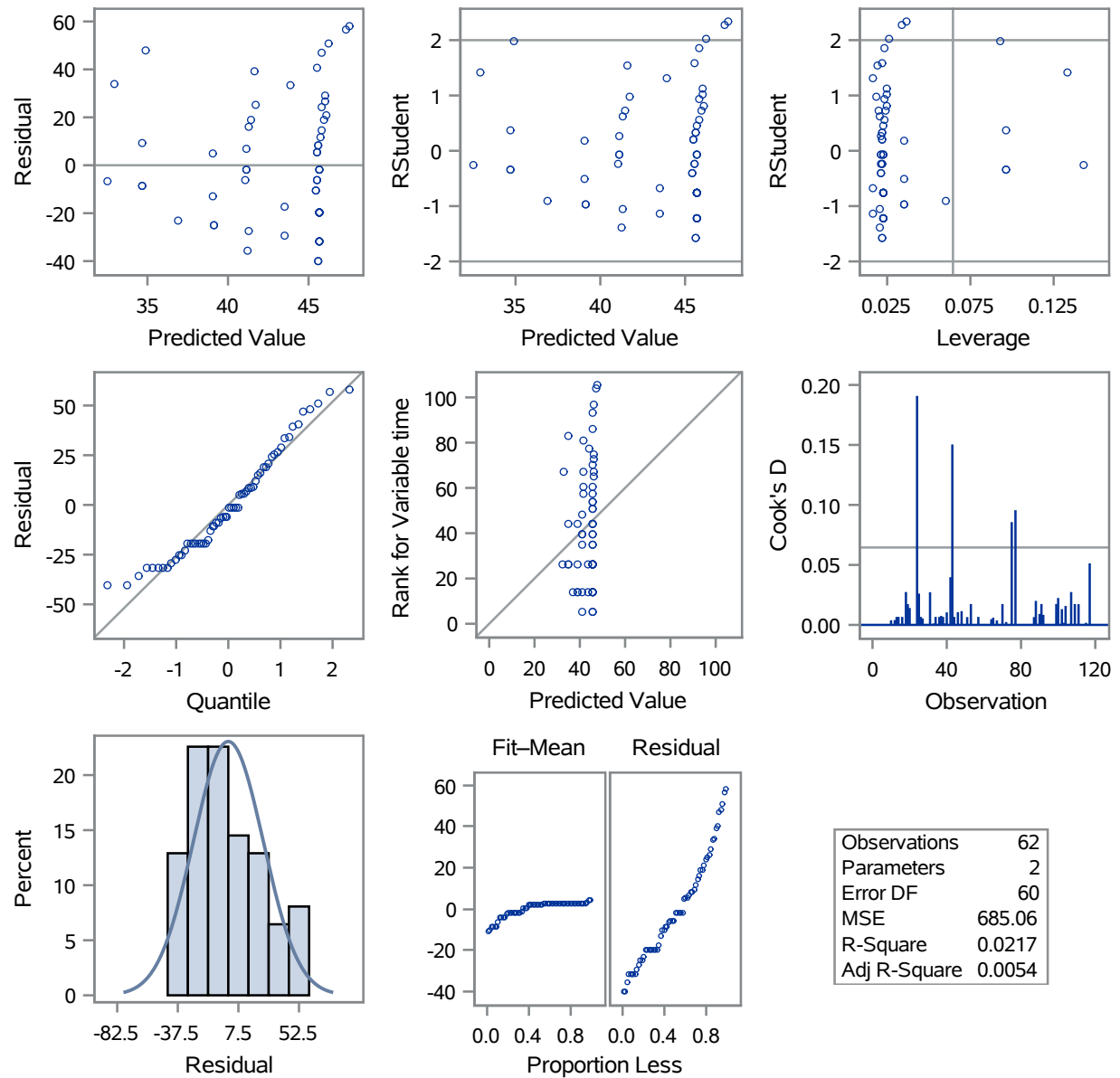
Root MSE	26.17368	R-Square	0.0217
Dependent Mean	43.25806	Adj R-Sq	0.0054
Coeff Var	60.50591		

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
Intercept	Intercept	1	43.25806	3.32406	13.01	<.0001
schnumber	Schoenfeld Residual for size	1	-2.19747	1.90281	-1.15	0.2527

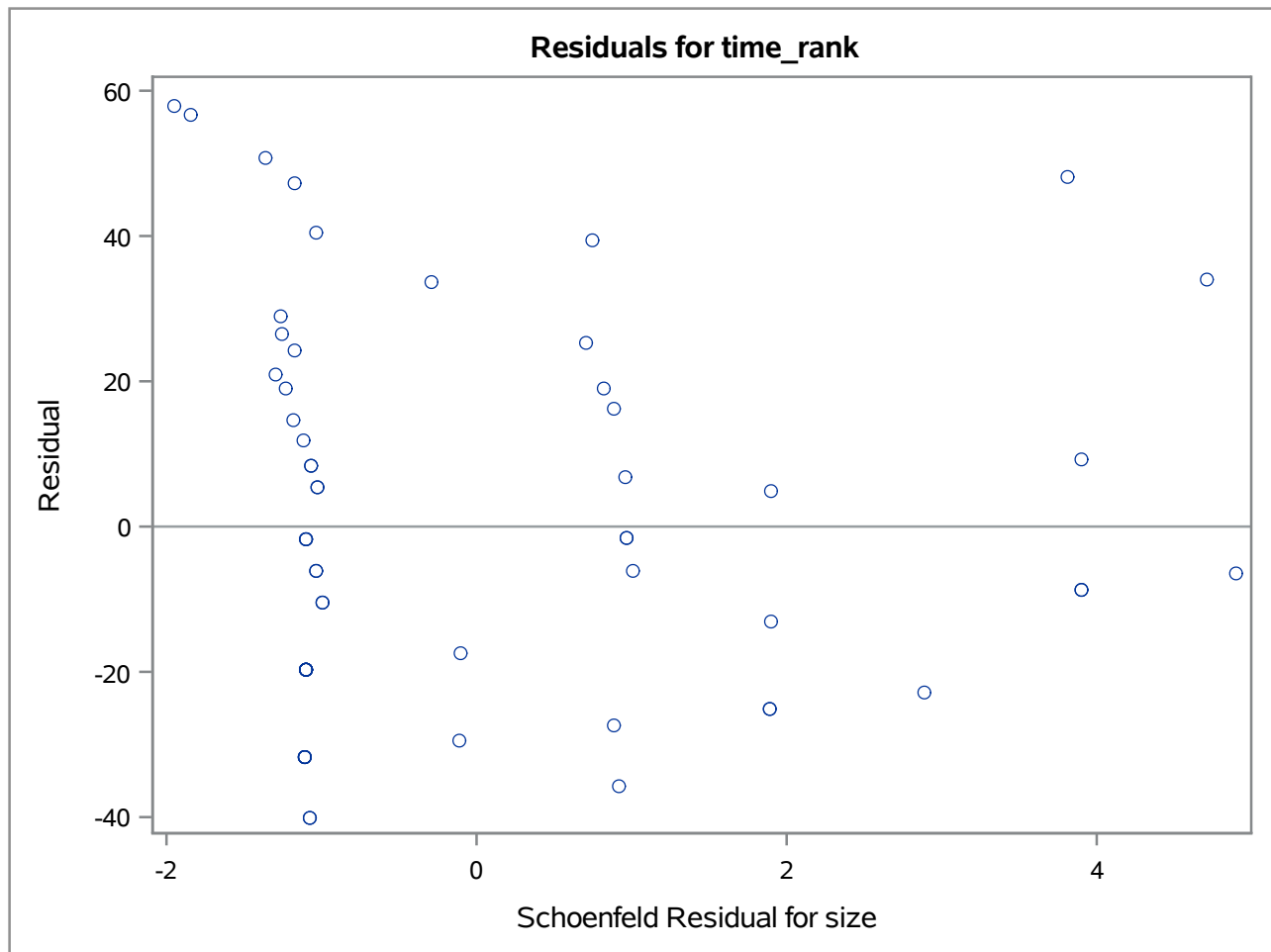
# Check PH assumptions using Schoenfeld Residuals

The REG Procedure  
Model: MODEL1  
Dependent Variable: time\_rank Rank for Variable time

## Fit Diagnostics for time\_rank

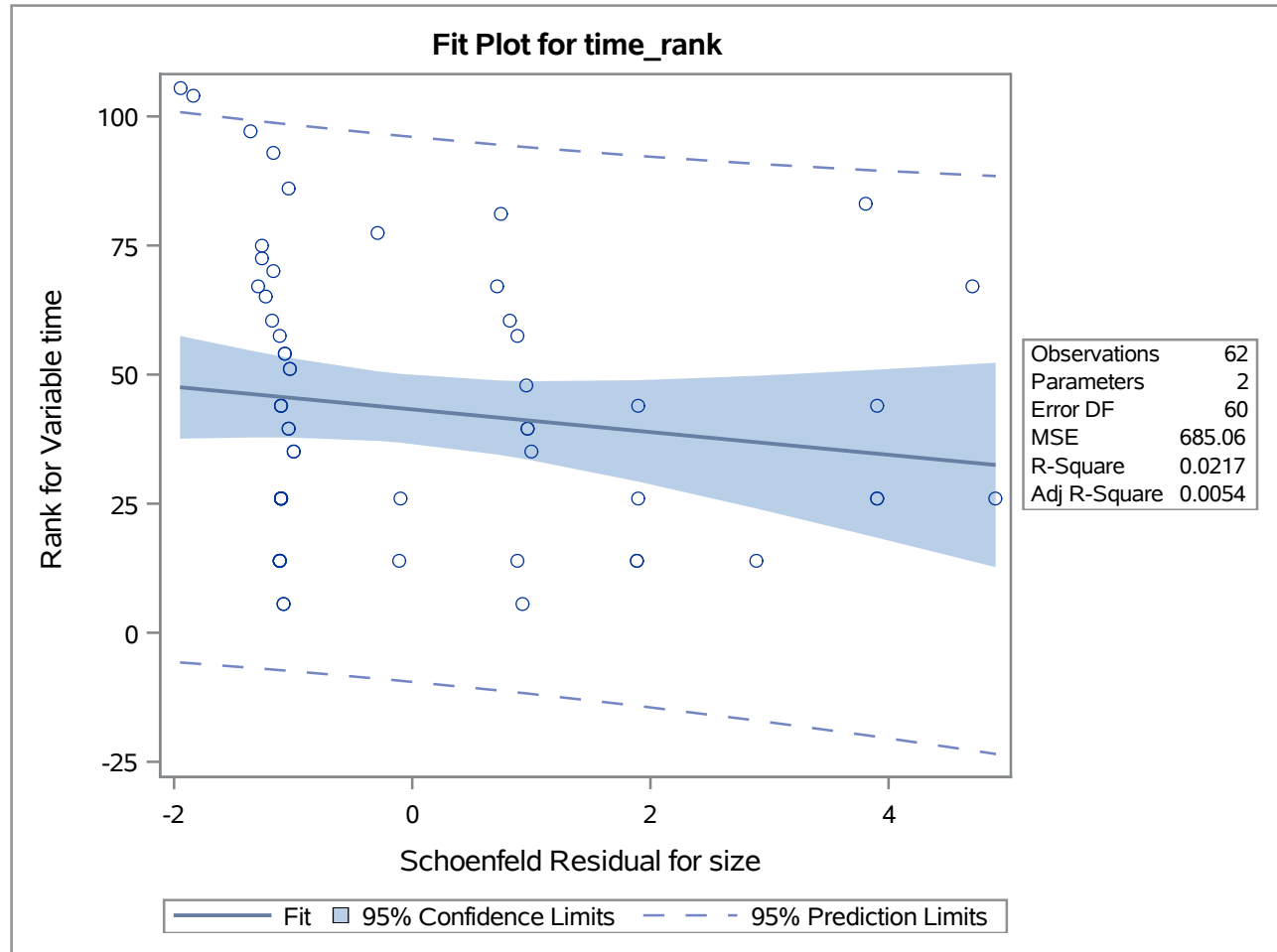




**Check PH assumptions using Schoenfeld Residuals****The REG Procedure****Model: MODEL1****Dependent Variable: time\_rank Rank for Variable time**

## Check PH assumptions using Schoenfeld Residuals

The REG Procedure  
Model: MODEL1  
Dependent Variable: time\_rank Rank for Variable time



plot Schoenfeld residual with continuous variable = size

## Check PH assumptions using Schoenfeld Residuals

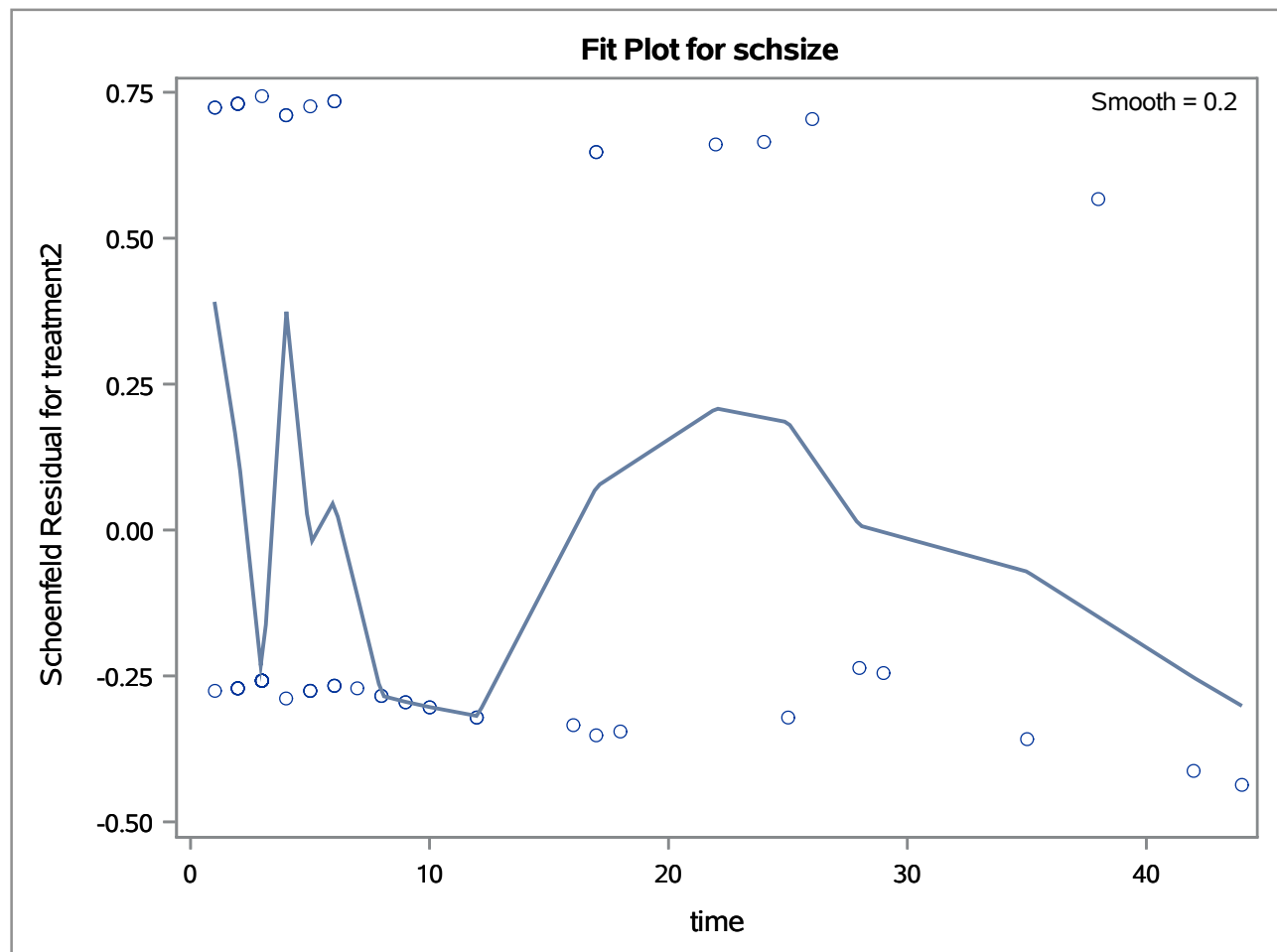
### The LOESS Procedure

Independent Variable Scaling	
Scaling applied: None	
Statistic	time
Minimum Value	1.00000
Maximum Value	44.00000

## Check PH assumptions using Schoenfeld Residuals

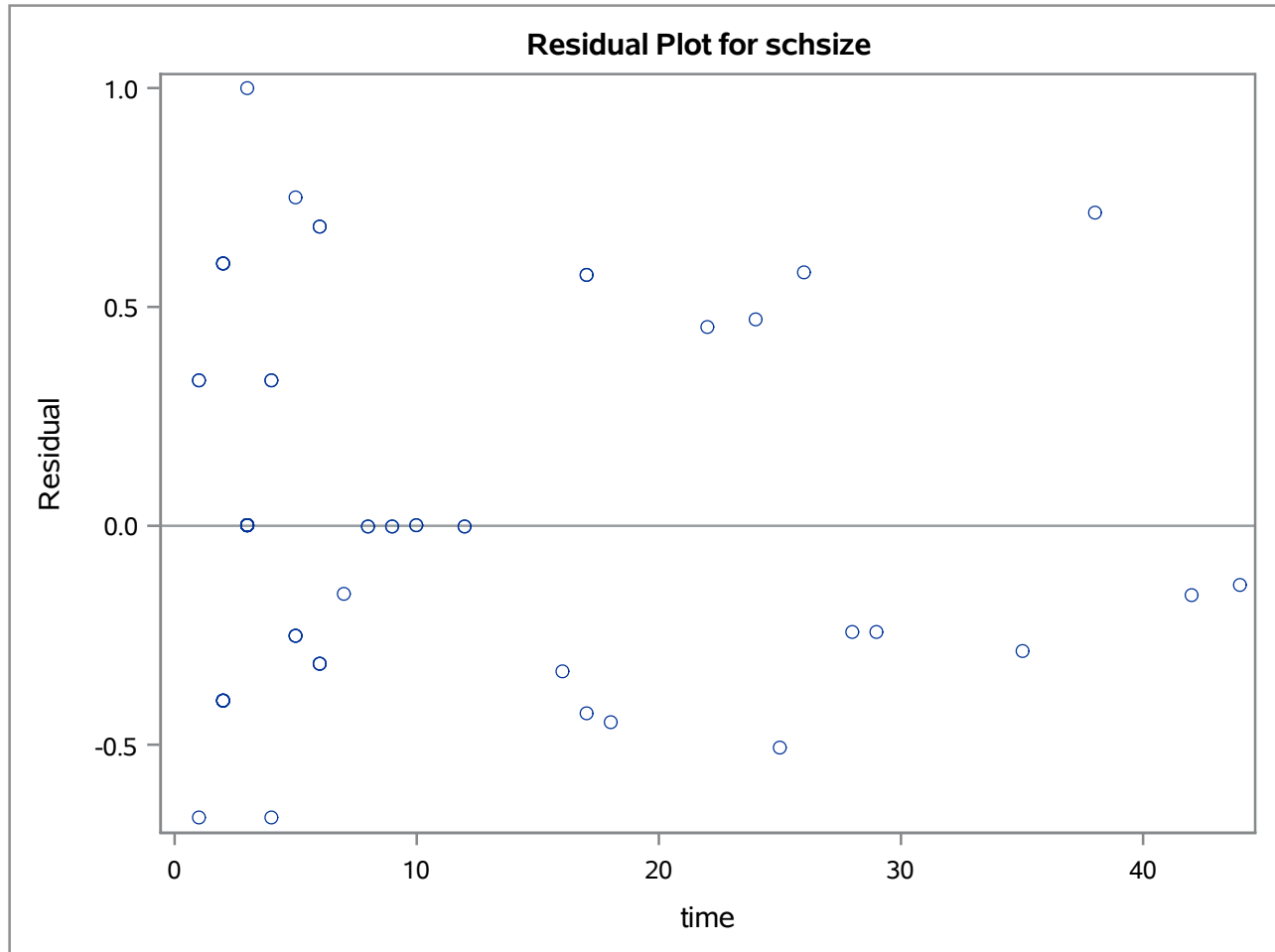
The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schsize

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	18
kd Tree Bucket Size	2
Degree of Local Polynomials	1
Smoothing Parameter	0.20000
Points in Local Neighborhood	12
Residual Sum of Squares	9.66593



## Check PH assumptions using Schoenfeld Residuals

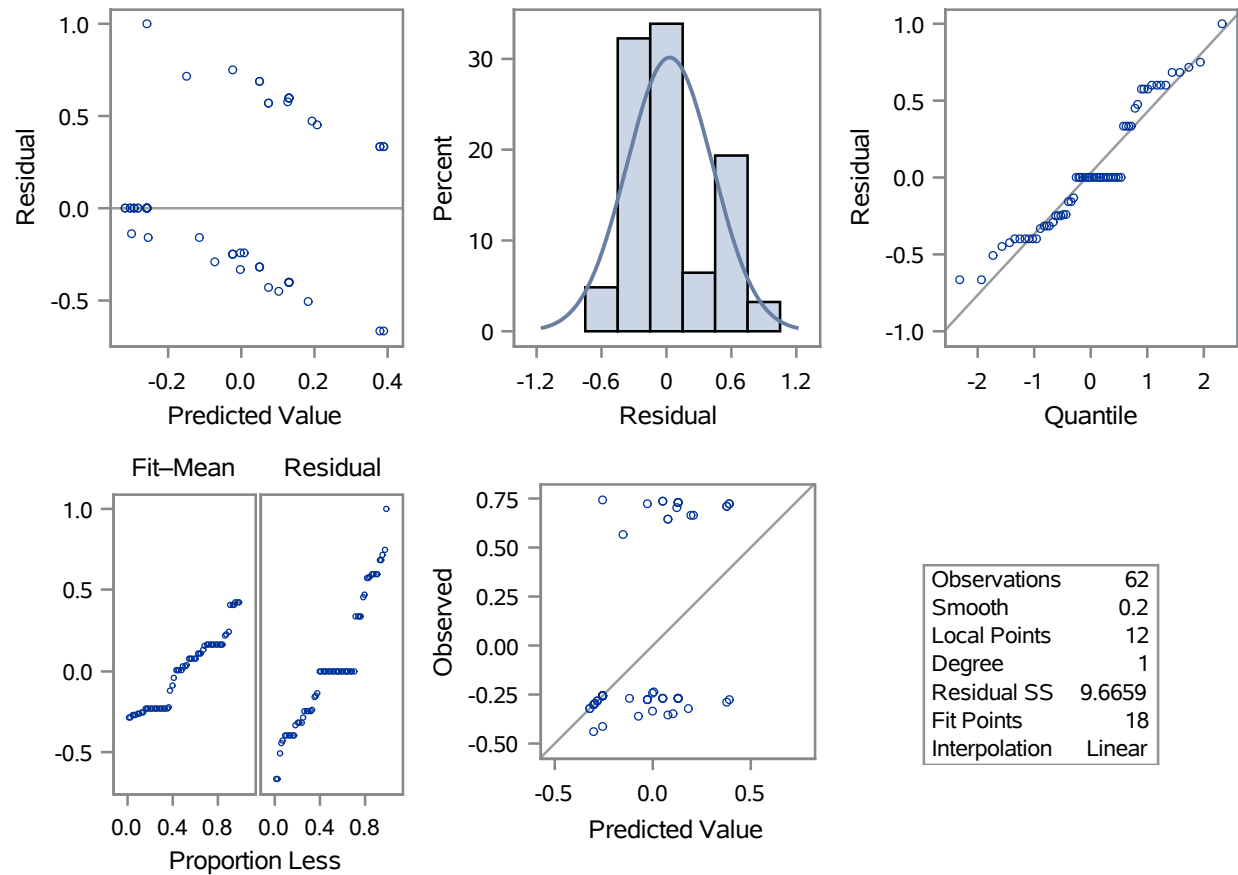
The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schsize



# Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.2  
Dependent Variable: schsize

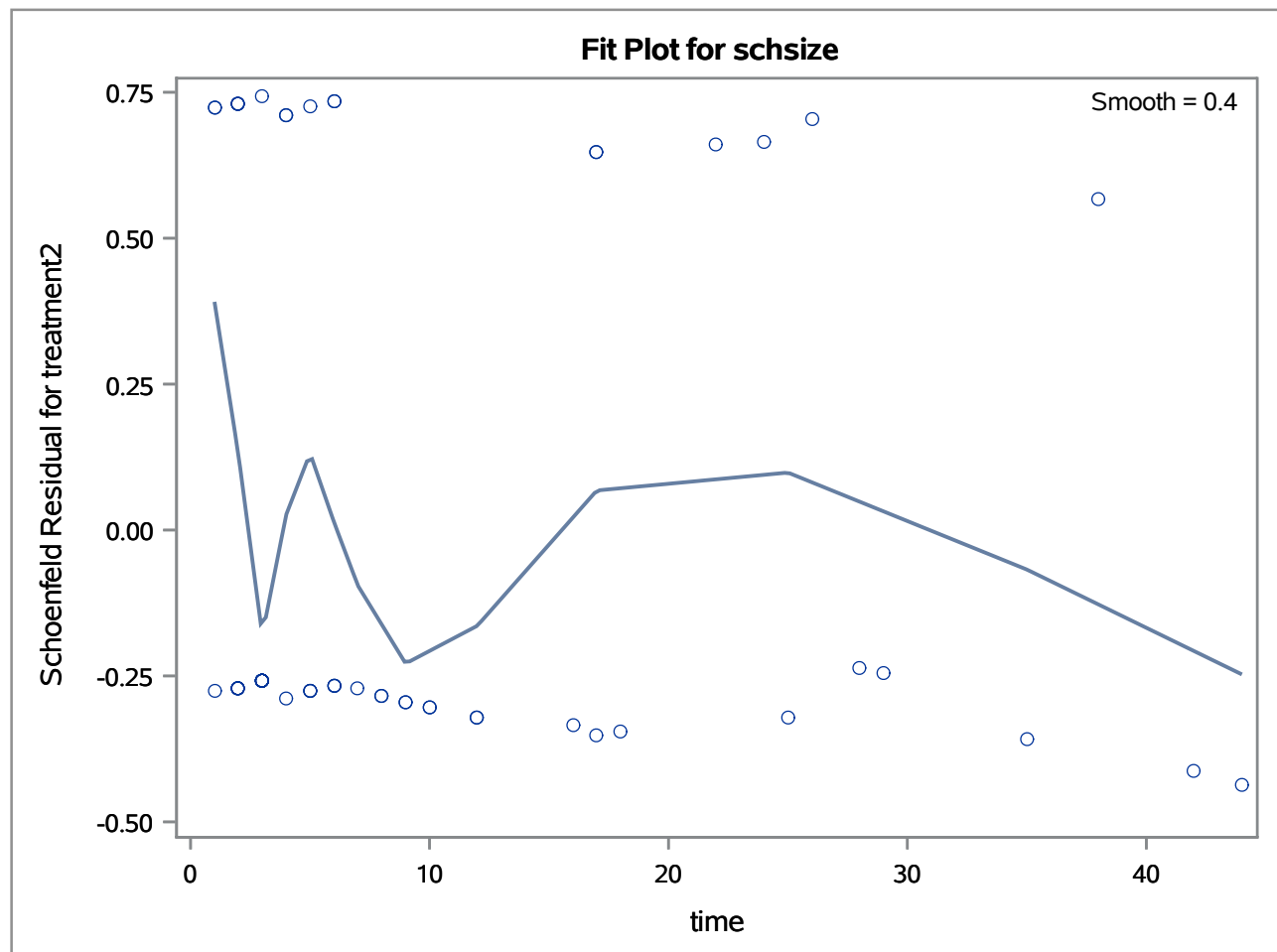
Fit Diagnostics for schsize



## Check PH assumptions using Schoenfeld Residuals

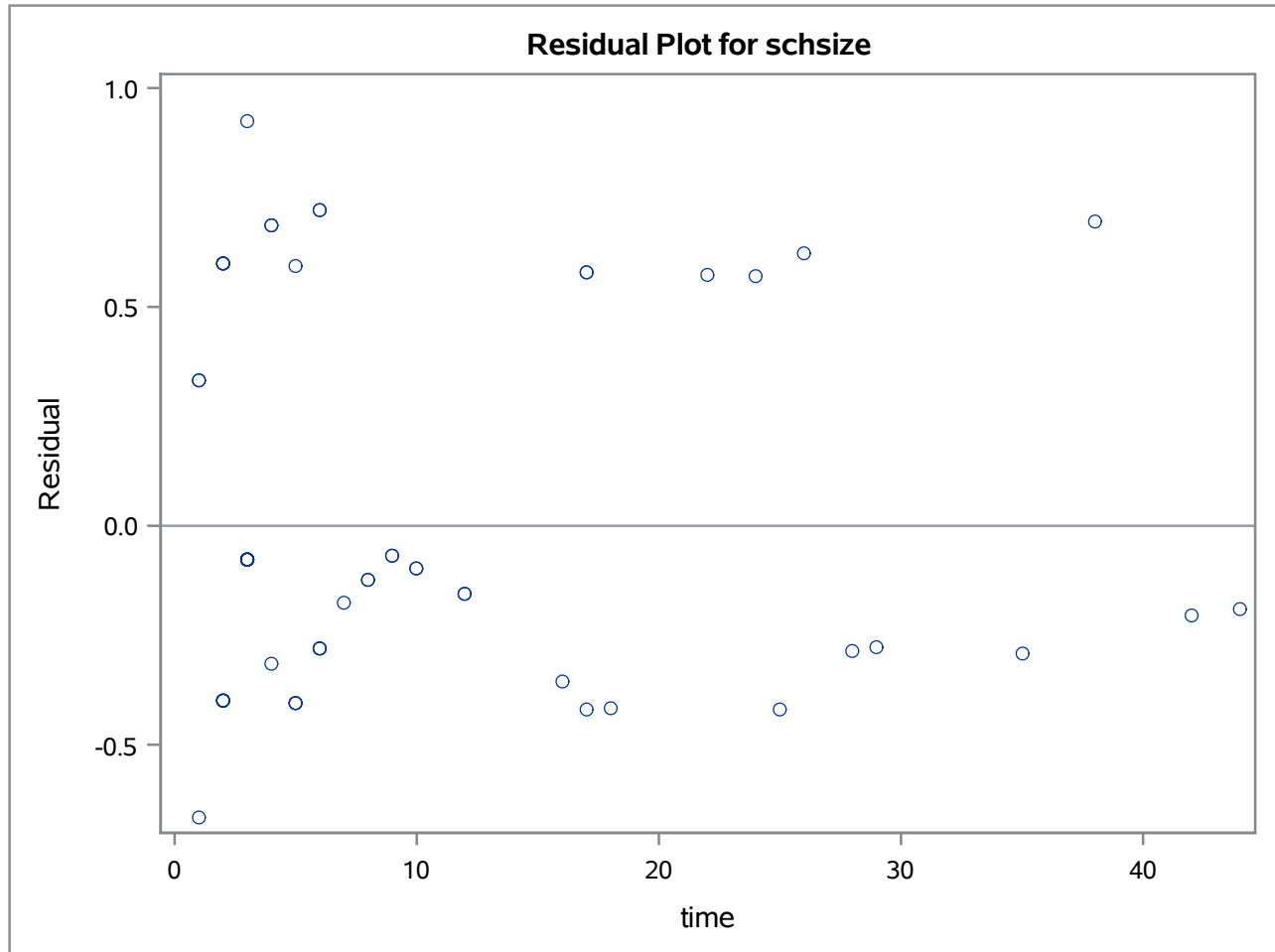
The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schsize

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	13
kd Tree Bucket Size	4
Degree of Local Polynomials	1
Smoothing Parameter	0.40000
Points in Local Neighborhood	24
Residual Sum of Squares	10.45514



## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schsize

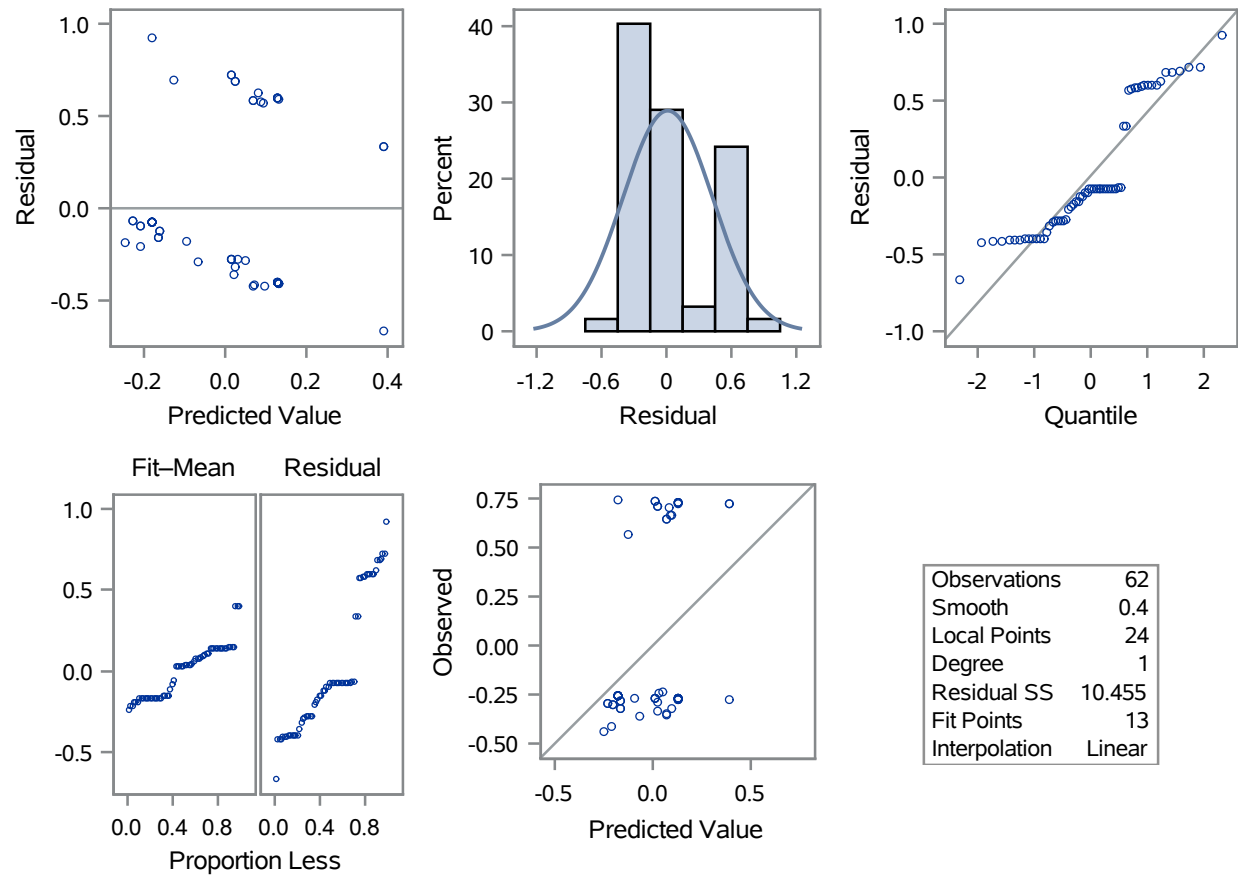




# Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.4  
Dependent Variable: schsize

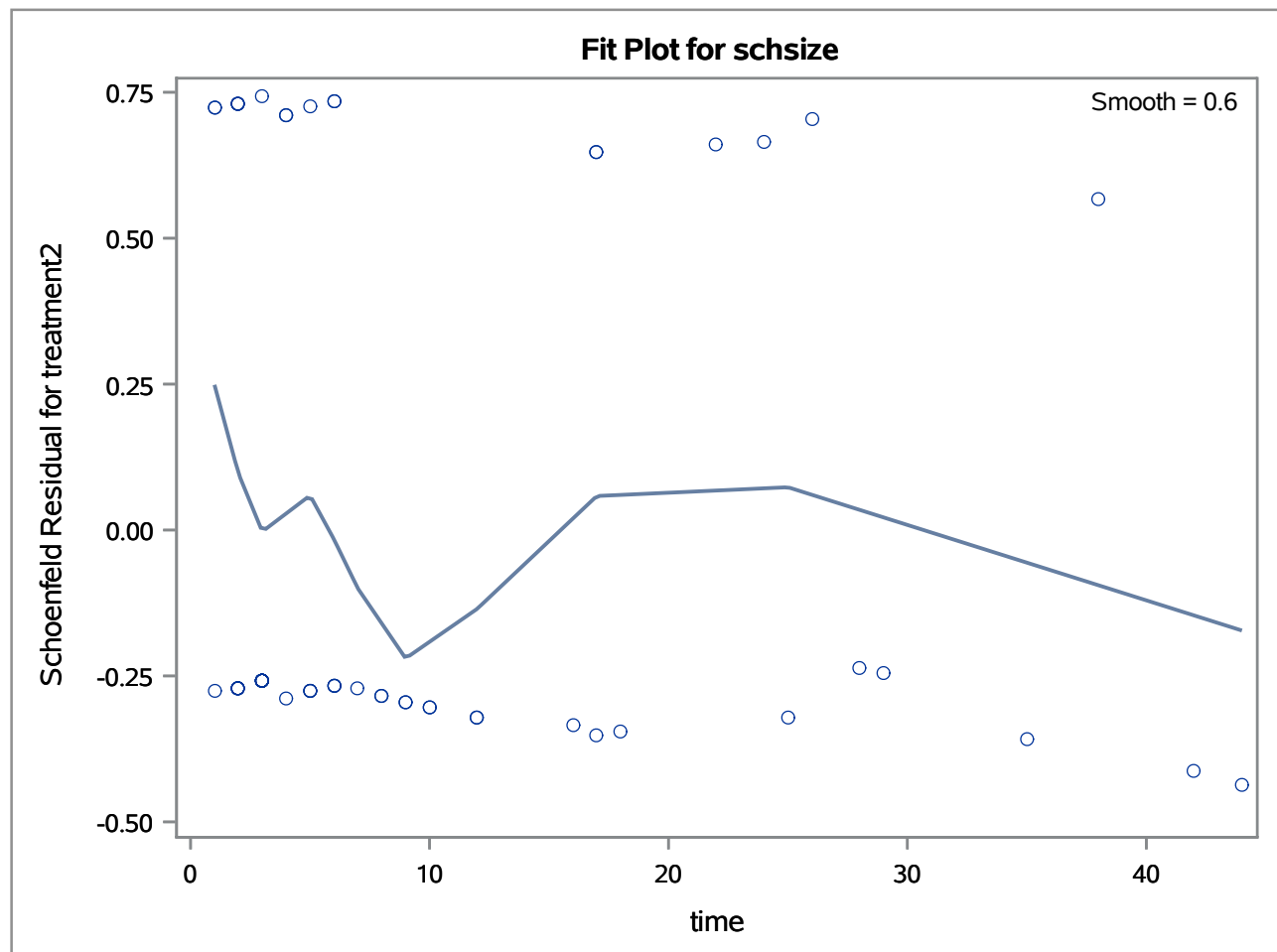
Fit Diagnostics for schsize



## Check PH assumptions using Schoenfeld Residuals

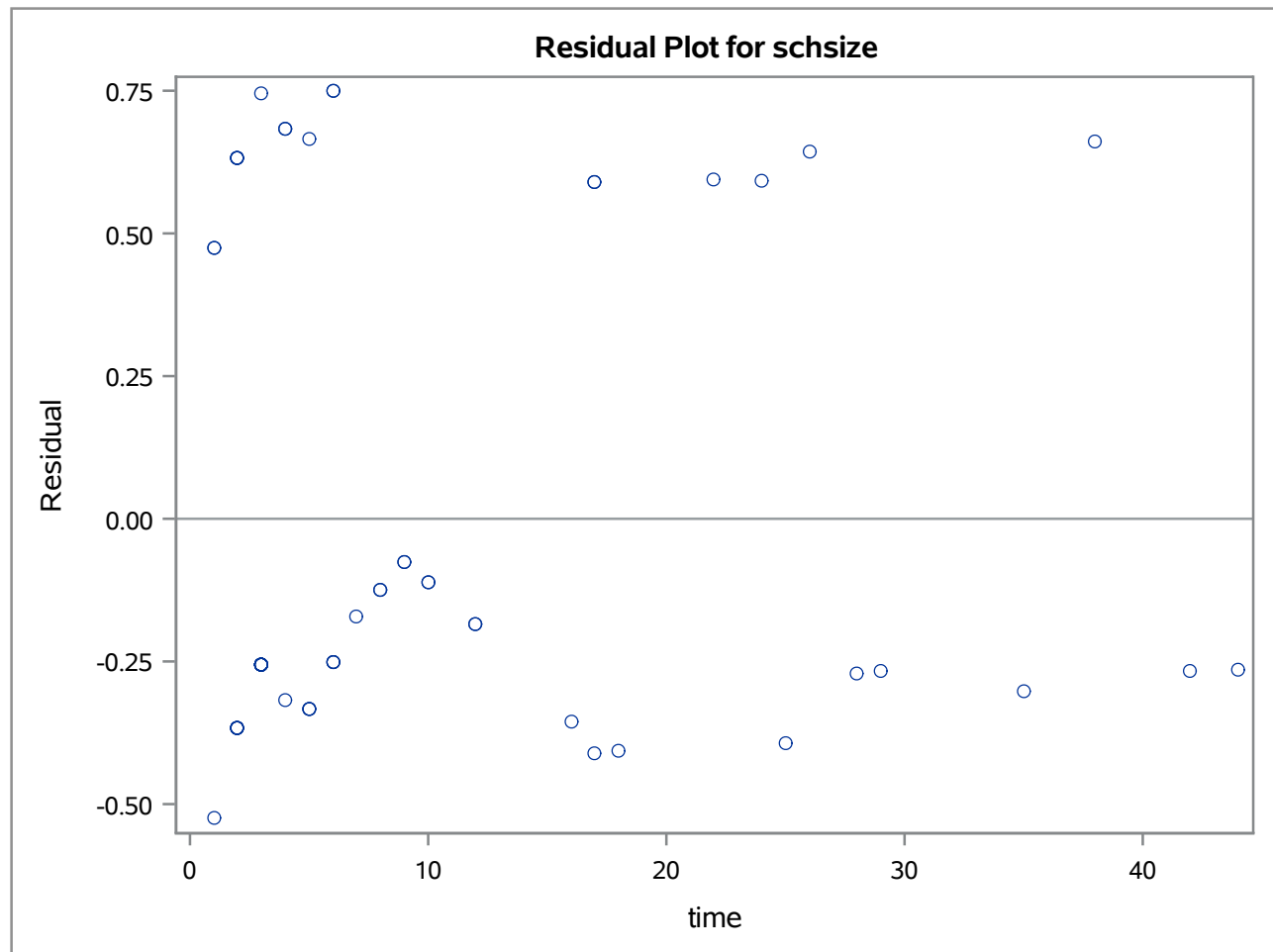
The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schsize

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	11
kd Tree Bucket Size	7
Degree of Local Polynomials	1
Smoothing Parameter	0.60000
Points in Local Neighborhood	37
Residual Sum of Squares	11.00337



## Check PH assumptions using Schoenfeld Residuals

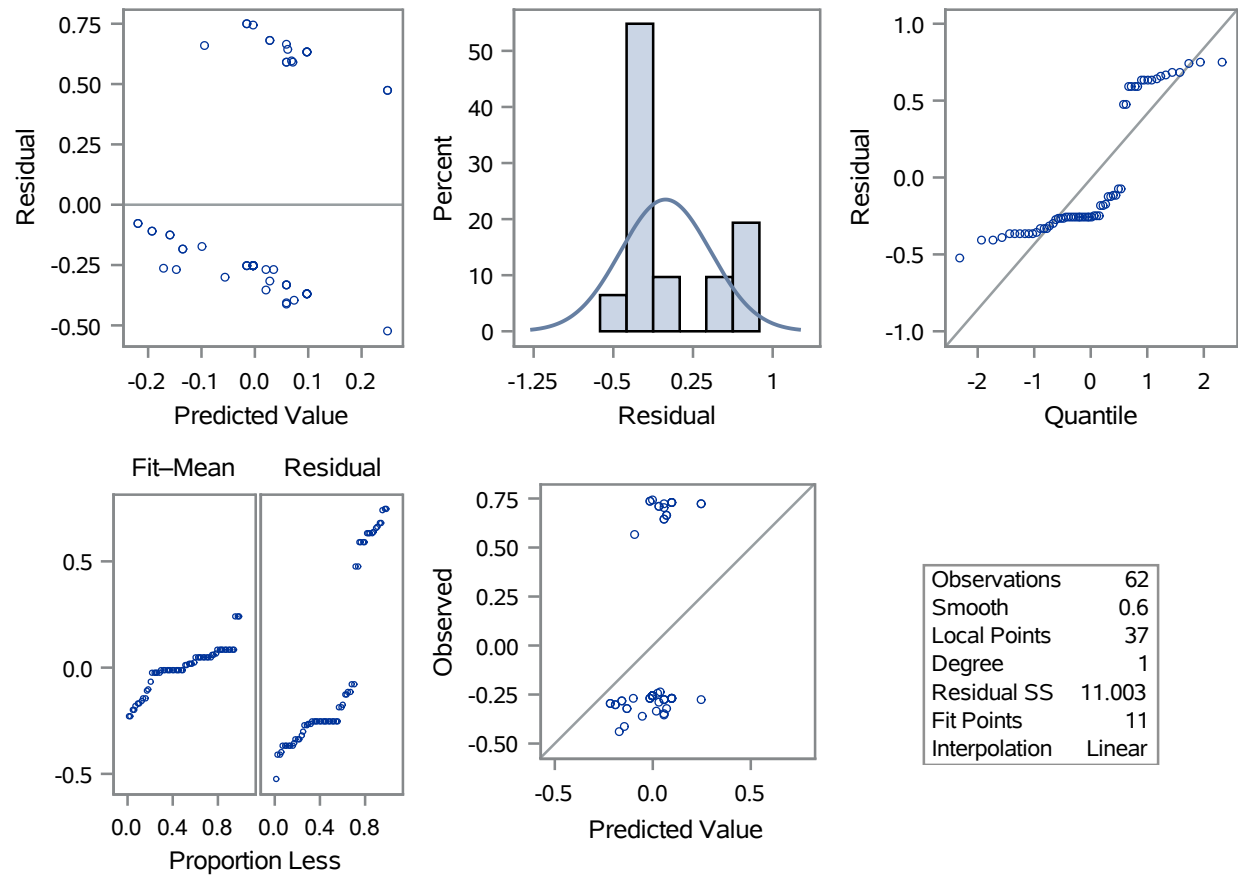
The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schsize



## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Smoothing Parameter: 0.6  
Dependent Variable: schsize

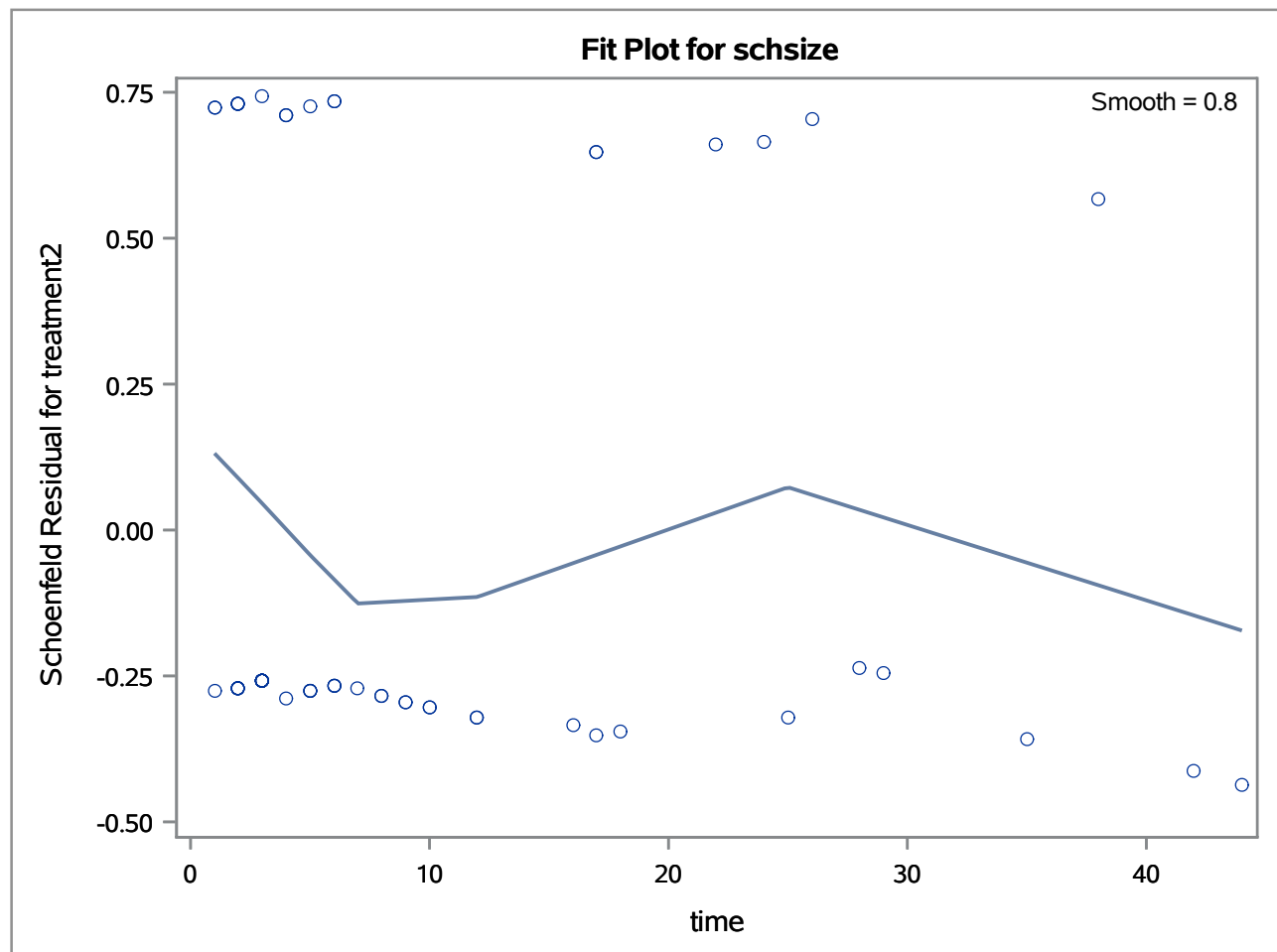
Fit Diagnostics for schsize



## Check PH assumptions using Schoenfeld Residuals

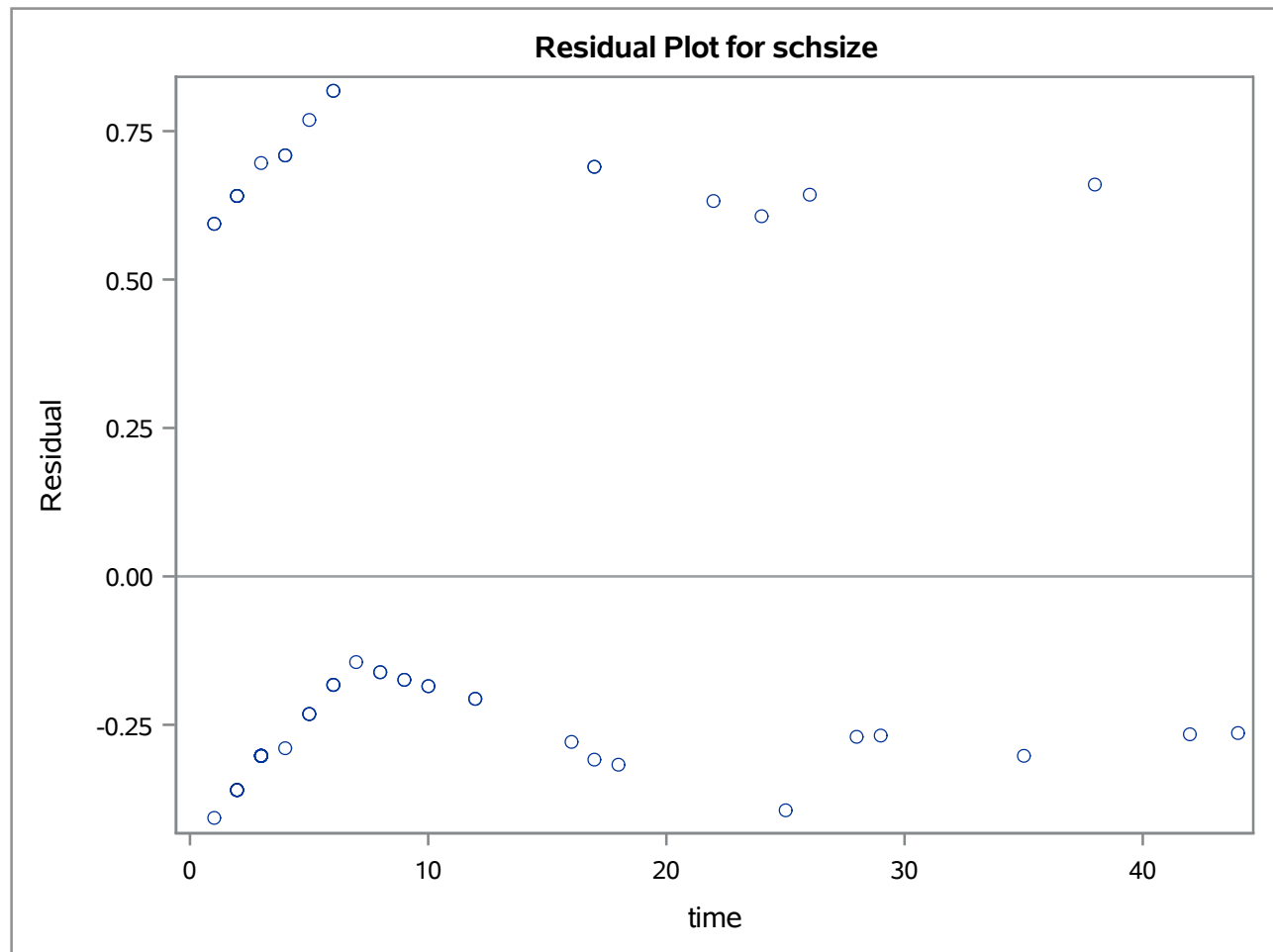
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schsize

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	62
Number of Fitting Points	8
kd Tree Bucket Size	9
Degree of Local Polynomials	1
Smoothing Parameter	0.80000
Points in Local Neighborhood	49
Residual Sum of Squares	11.81625



## Check PH assumptions using Schoenfeld Residuals

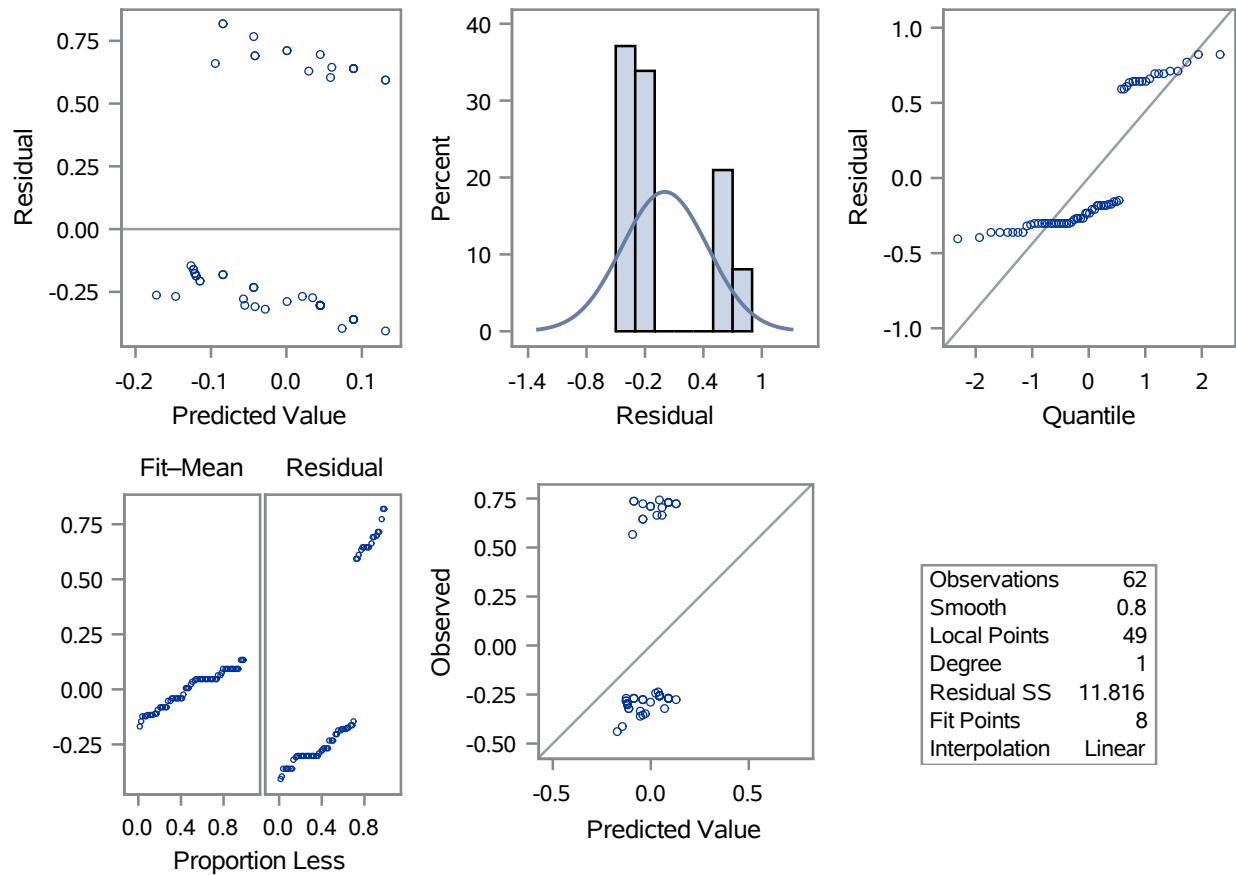
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schsize



# Check PH assumptions using Schoenfeld Residuals

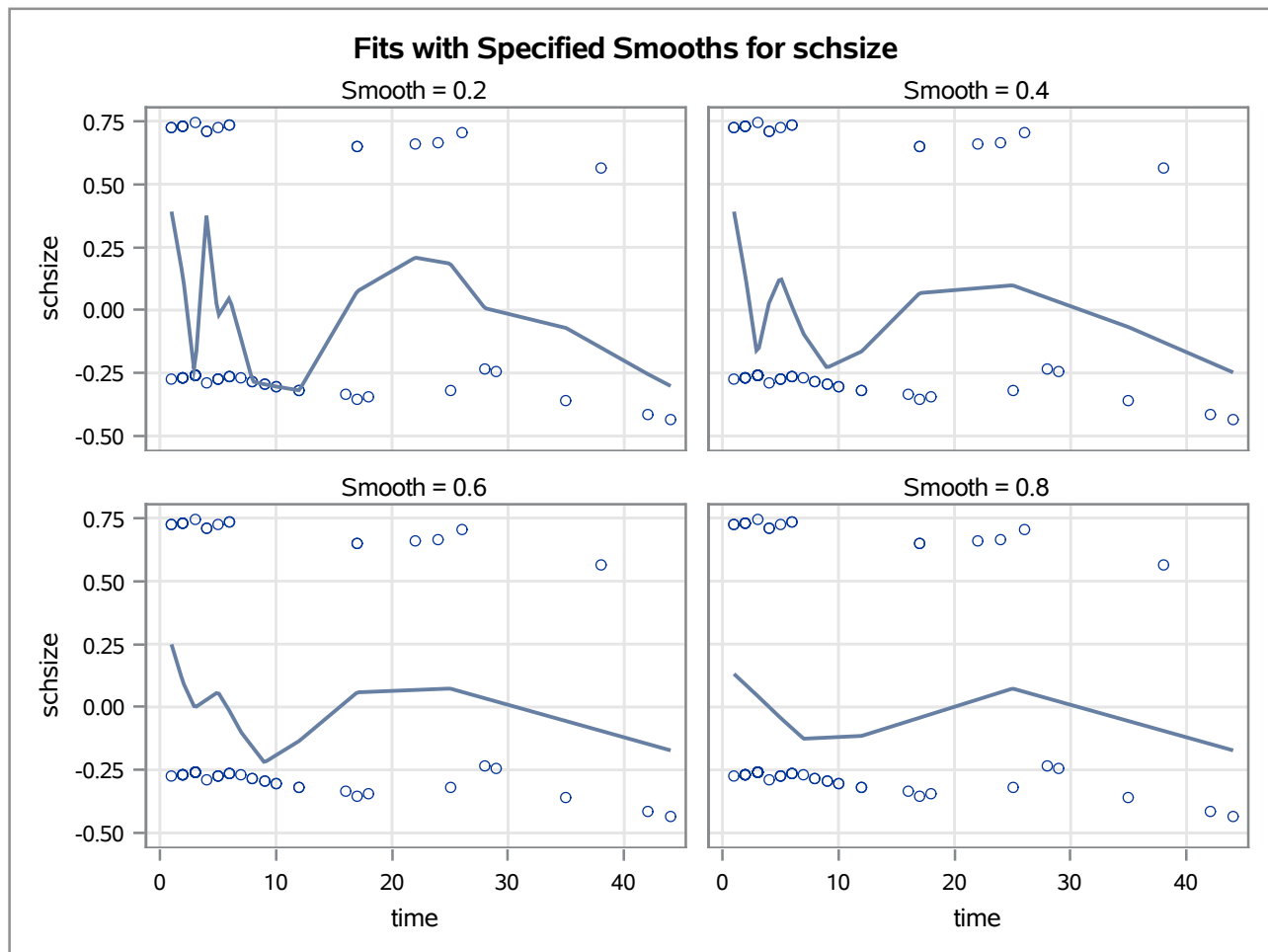
The LOESS Procedure  
Smoothing Parameter: 0.8  
Dependent Variable: schsize

Fit Diagnostics for schsize



## Check PH assumptions using Schoenfeld Residuals

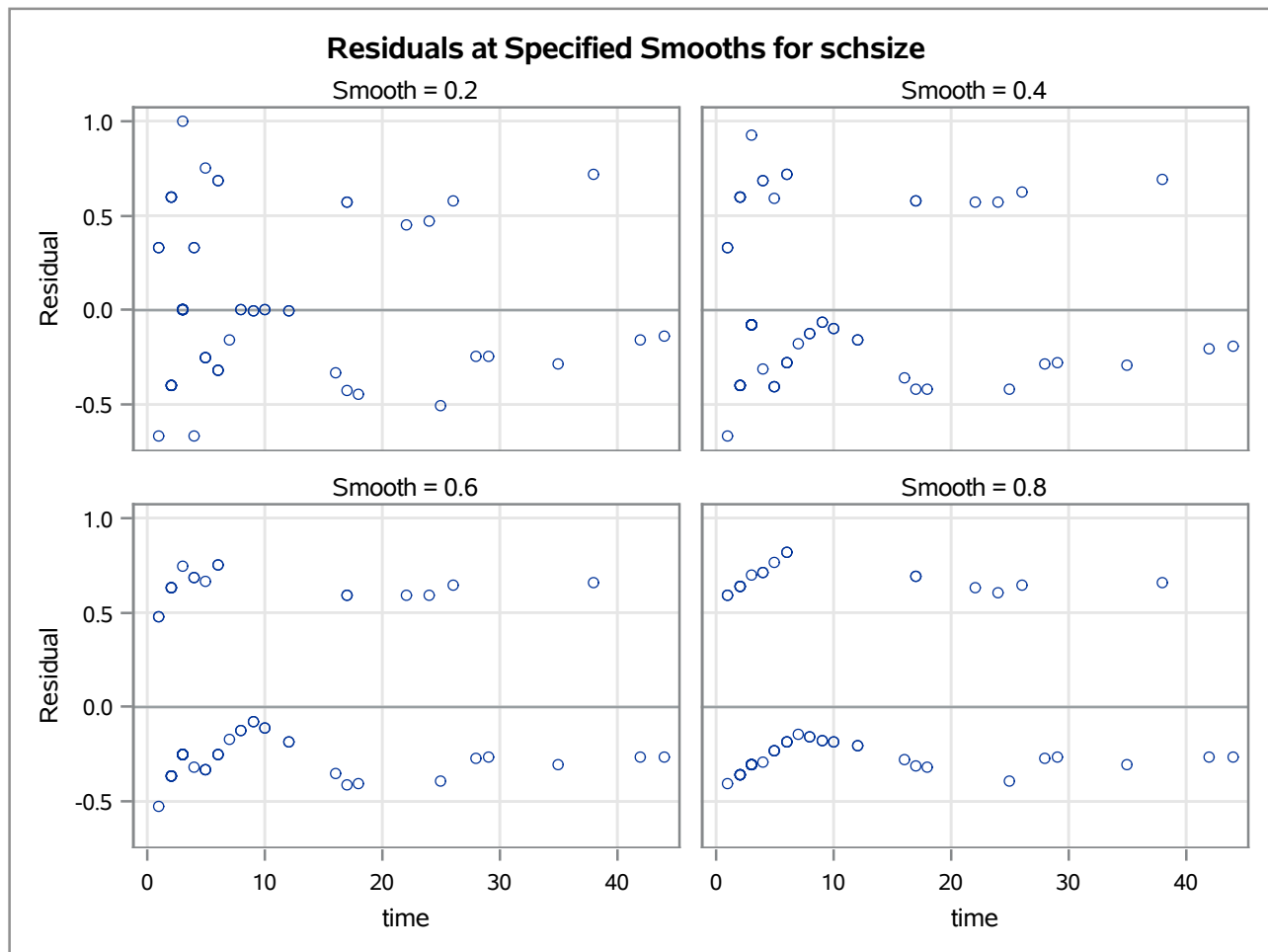
The LOESS Procedure  
Dependent Variable: schsize





## Check PH assumptions using Schoenfeld Residuals

The LOESS Procedure  
Dependent Variable: schsize



## Check PH assumptions using Schoenfeld Residuals

### The CORR Procedure

<b>1 With Variables:</b>	time_rank
<b>1 Variables:</b>	schsize

Simple Statistics							
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
time_rank	118	59.50000	34.16069	7021	1.50000	118.00000	Rank for Variable time
schsize	62	-1.4531E-8	0.45405	-9.009E-7	-0.43639	0.74263	Schoenfeld Residual for treatment2

Pearson Correlation Coefficients Prob >  r  under H0: Rho=0 Number of Observations	
	schsize
time_rank Rank for Variable time	-0.10959 0.3965 62

## Check PH assumptions using Schoenfeld Residuals

### The REG Procedure

Model: MODEL1

Dependent Variable: time\_rank Rank for Variable time

Number of Observations Read	118
Number of Observations Used	62
Number of Observations with Missing Values	56

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	504.64237	504.64237	0.73	0.3965
Error	60	41513	691.87881		
Corrected Total	61	42017			

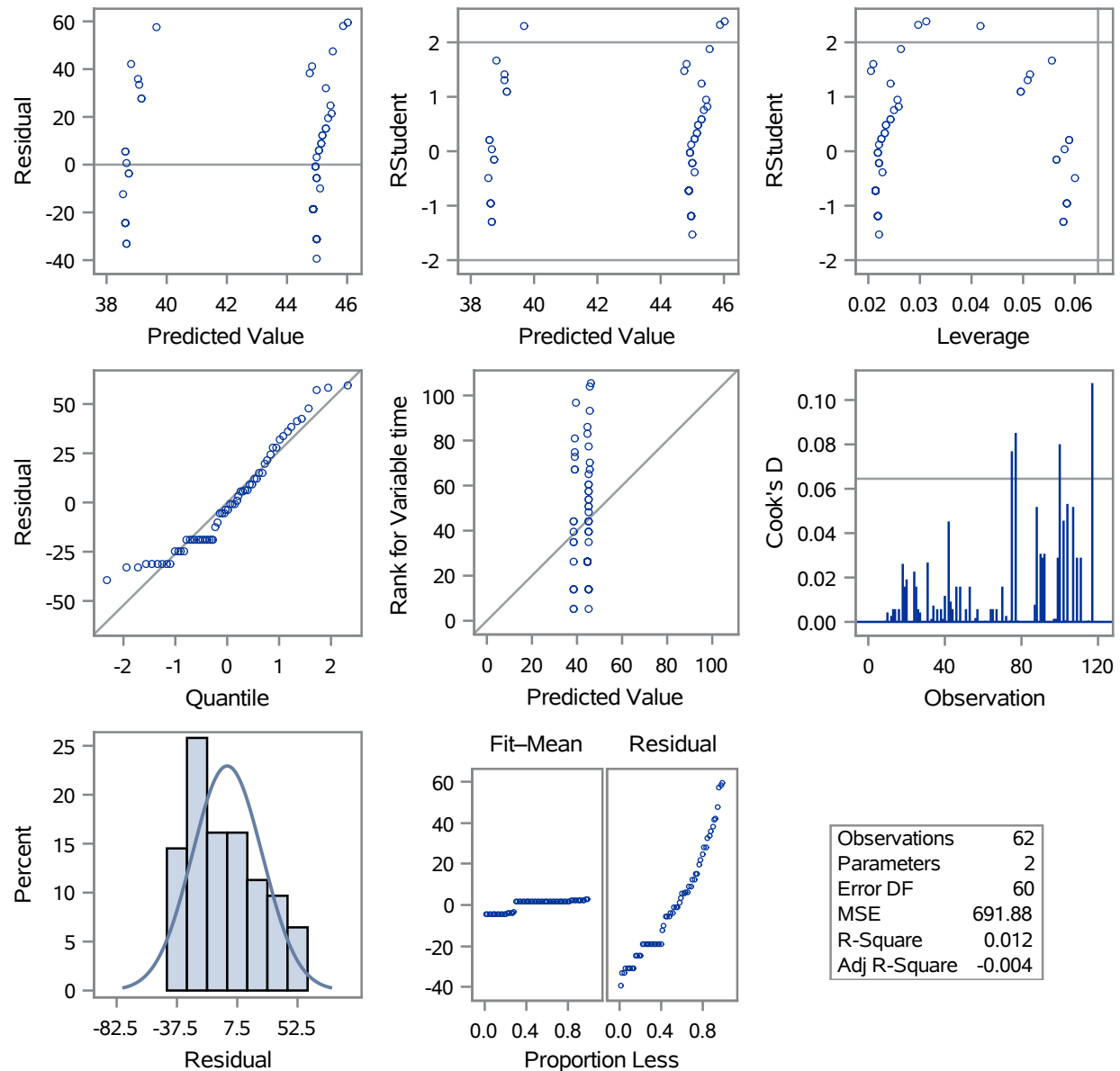
Root MSE	26.30359	R-Square	0.0120
Dependent Mean	43.25806	Adj R-Sq	-0.0045
Coeff Var	60.80621		

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr >  t
Intercept	Intercept	1	43.25806	3.34056	12.95	<.0001
schsize	Schoenfeld Residual for treatment2	1	-6.33465	7.41730	-0.85	0.3965

# Check PH assumptions using Schoenfeld Residuals

The REG Procedure  
 Model: MODEL1  
 Dependent Variable: time\_rank Rank for Variable time

## Fit Diagnostics for time\_rank

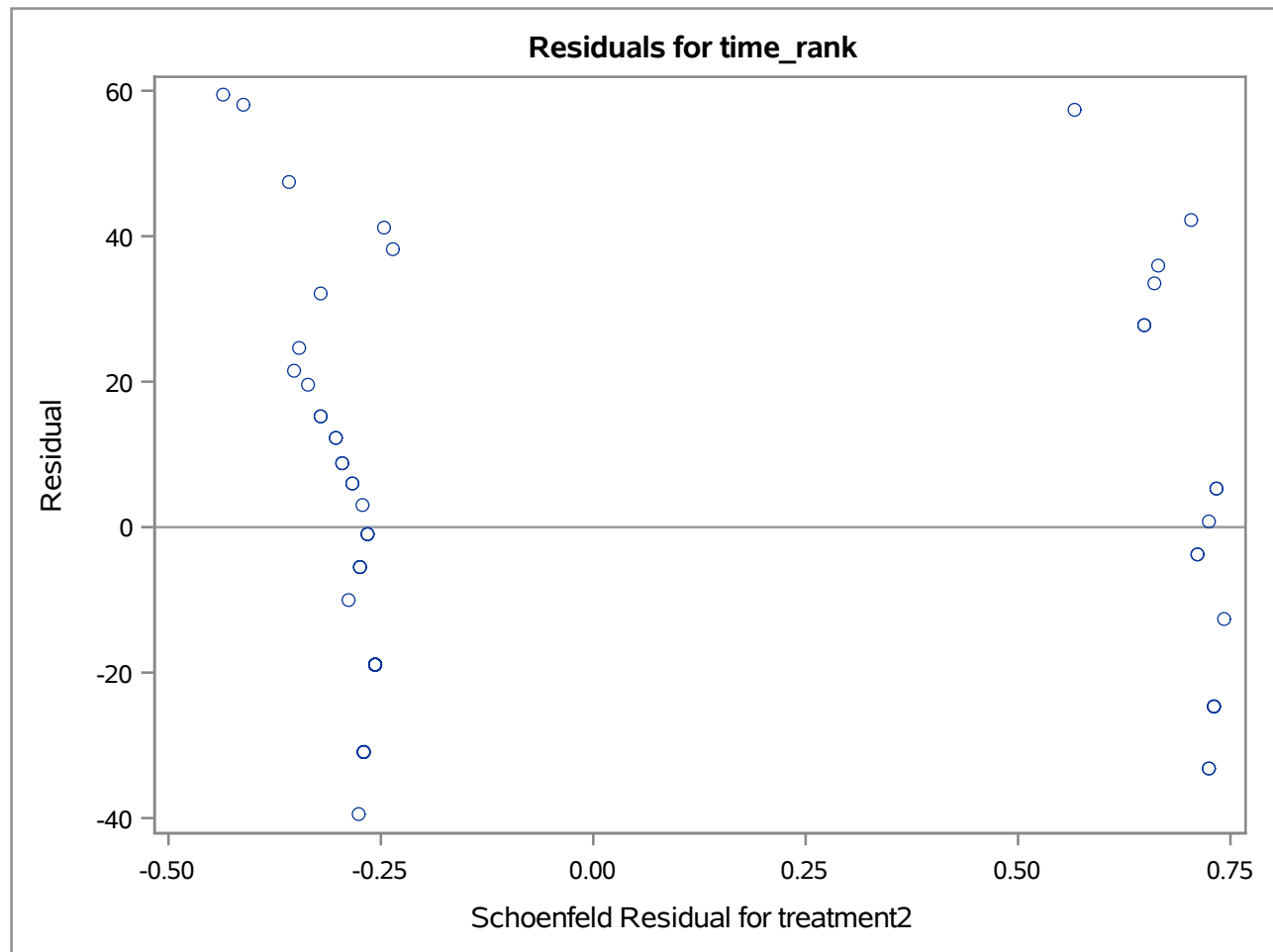


## Check PH assumptions using Schoenfeld Residuals

The REG Procedure

Model: MODEL1

Dependent Variable: time\_rank Rank for Variable time

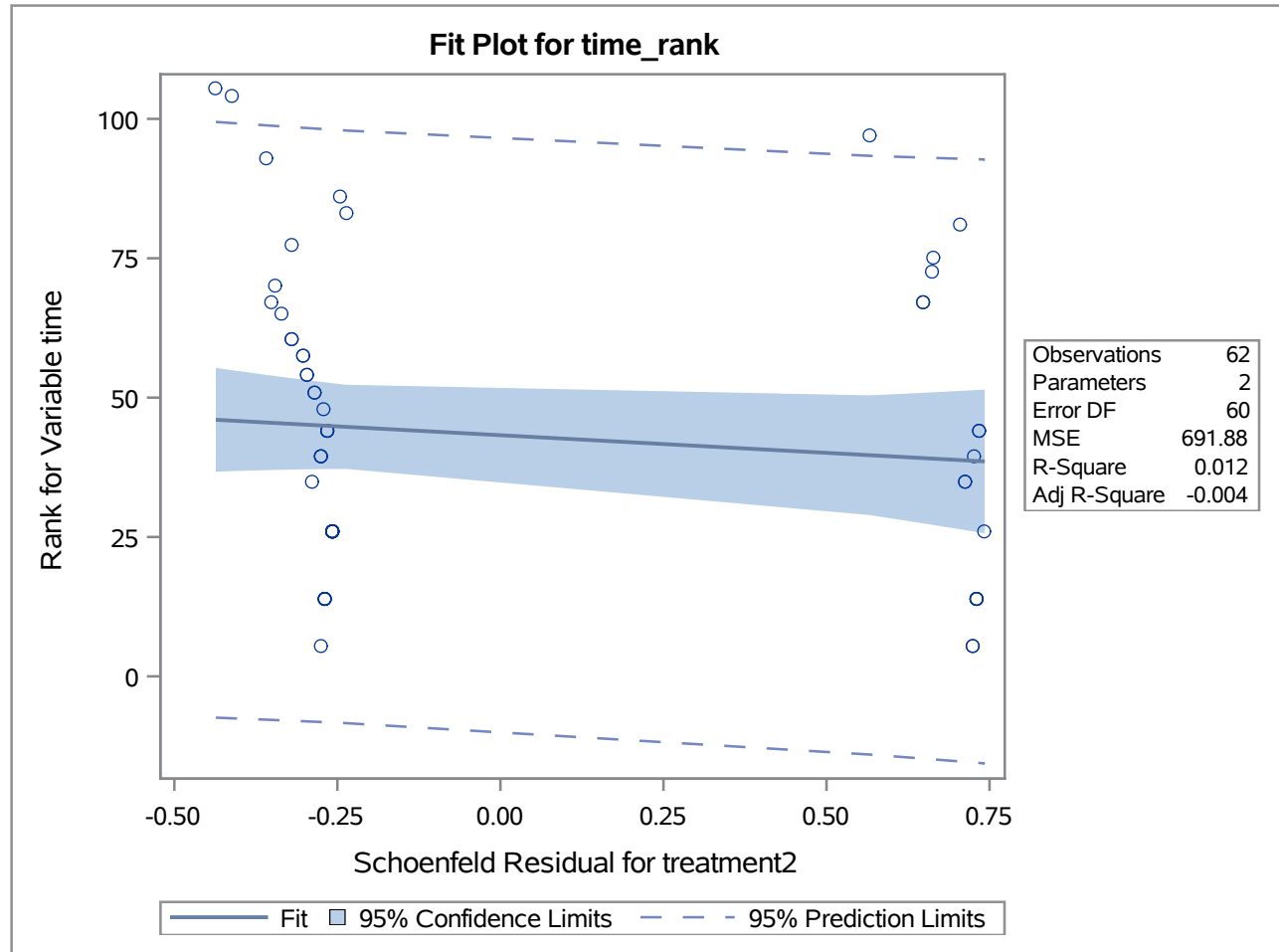


## Check PH assumptions using Schoenfeld Residuals

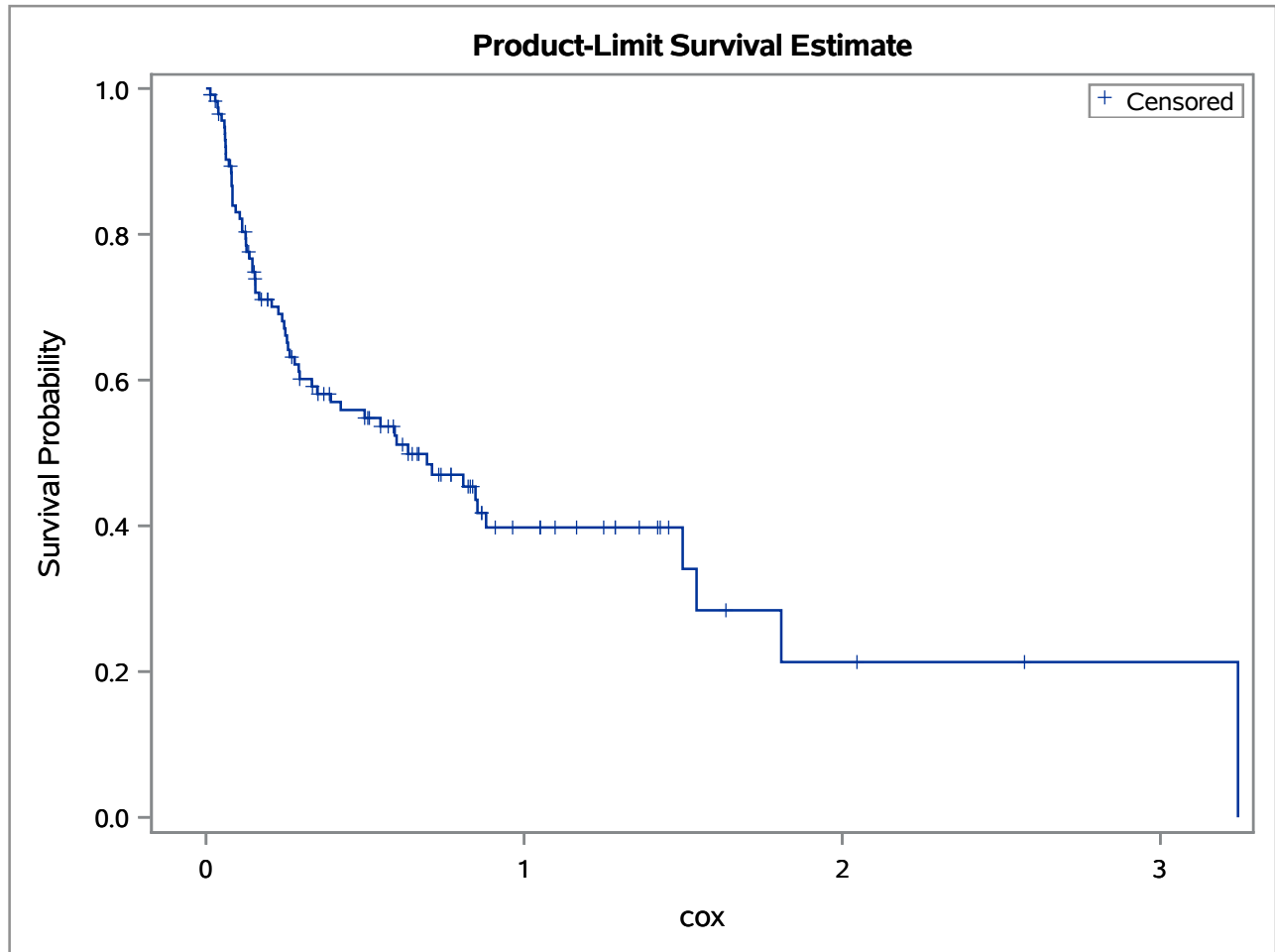
The REG Procedure

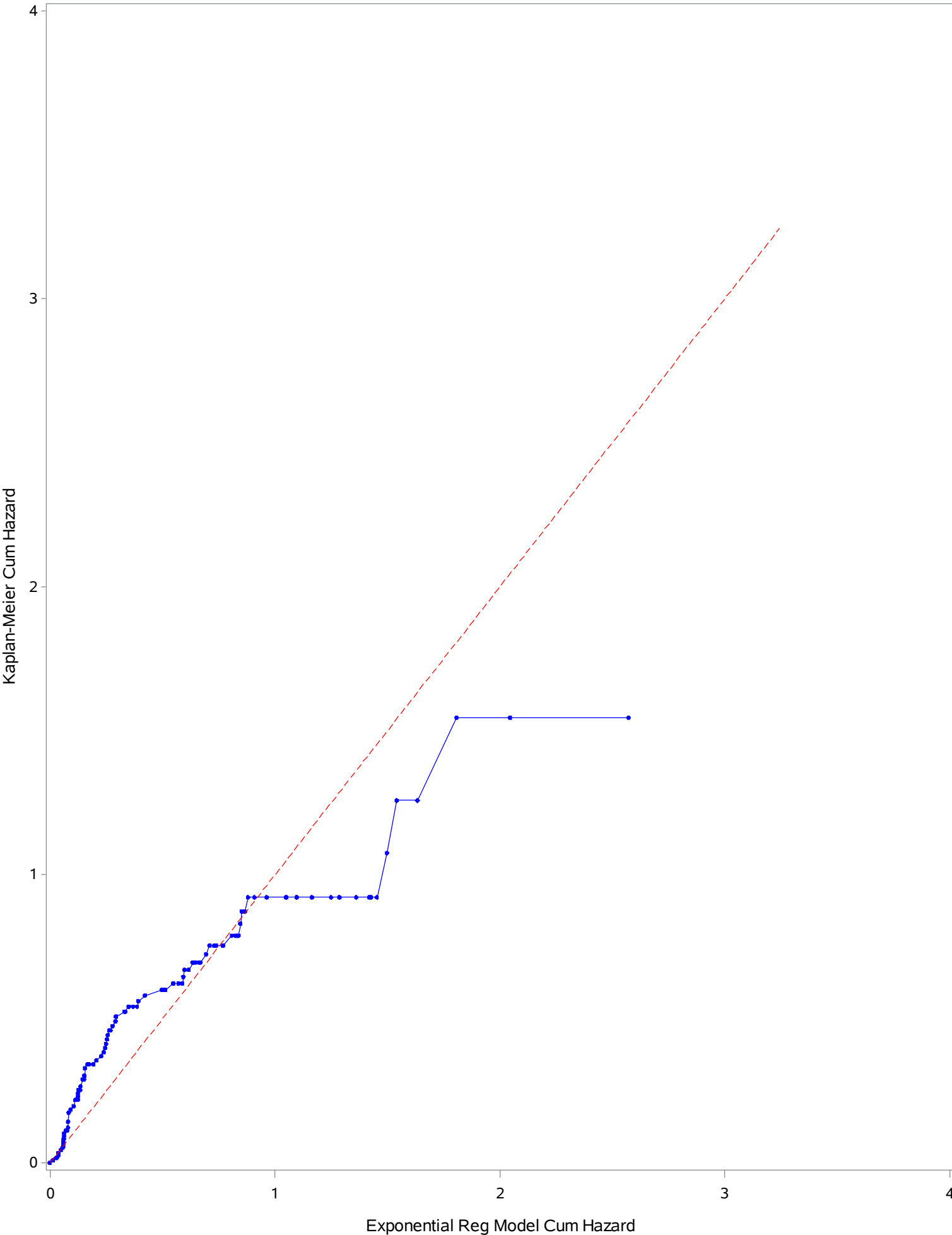
Model: MODEL1

Dependent Variable: time\_rank Rank for Variable time



## The LIFETEST Procedure







## The LIFETEST Procedure

