H1 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H1 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	17497.3861	**DFE**	61
MSE	286.84240	**Root MSE**	16.93642
SBC	541.552864	**AIC**	537.266595
MAE	14.1730393	**AICC**	537.466595
MAPE	1.75043431	**HQC**	538.952406
Durbin-Watson	0.0868	**Total R-Square**	0.8255

<table>
<tr><th colspan="6">Parameter Estimates</th></tr>
<tr><th>Variable</th><th>DF</th><th>Estimate</th><th>Standard Error</th><th>t Value</th><th>Approx Pr > |t|</th></tr>
<tr><td>Intercept</td><td>1</td><td>889.6458</td><td>4.9433</td><td>179.97</td><td><.0001</td></tr>
<tr><td>TIME</td><td>1</td><td>-1.9933</td><td>0.1173</td><td>-16.99</td><td><.0001</td></tr>
</table>

<table>
<tr><th colspan="4">Estimates of Autocorrelations</th></tr>
<tr><th>Lag</th><th>Covariance</th><th>Correlation</th><th>-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1</th></tr>
<tr><td>0</td><td>277.7</td><td>1.000000</td><td>| |********************|</td></tr>
<tr><td>1</td><td>254.3</td><td>0.915495</td><td>| |****************** |</td></tr>
<tr><td>2</td><td>217.9</td><td>0.784541</td><td>| |**************** |</td></tr>
<tr><td>3</td><td>171.6</td><td>0.617950</td><td>| |************ |</td></tr>
</table>

Preliminary MSE	37.6911

Estimates of Autoregressive Parameters			
Lag	**Coefficient**	**Standard Error**	**t Value**
1	-1.120137	0.077345	-14.48
3	0.260844	0.077345	3.37

Expected Autocorrelations	
Lag	**Autocorr**
0	1.0000
1	0.9150
2	0.7863
3	0.6199

Coefficients for First NLAG Observations			
	1	**2**	**3**
1	0.369768661	0	0
2	-0.838826318	0.9167106706	0
3	0.3026584532	-1.160306027	0.965381061

Algorithm converged.

H1 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	778.036557	**DFE**	59
MSE	13.18706	**Root MSE**	3.63140
SBC	357.60381	**AIC**	349.031271
MAE	2.62051605	**AICC**	349.720926
MAPE	0.32504487	**HQC**	352.402892
Log Likelihood	-170.51564	**Transformed Regression R-Square**	0.4607
Durbin-Watson	1.6802	**Total R-Square**	0.9922
		Observations	63

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	882.4408	11.2377	78.52	<.0001
TIME	1	-1.8688	0.2646	-7.06	<.0001
AR1	1	-1.2982	0.0492	-26.38	<.0001
AR3	1	0.3870	0.0485	7.98	<.0001

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.9597
2	0.8745
3	0.7482

Coefficients for First NLAG Observations

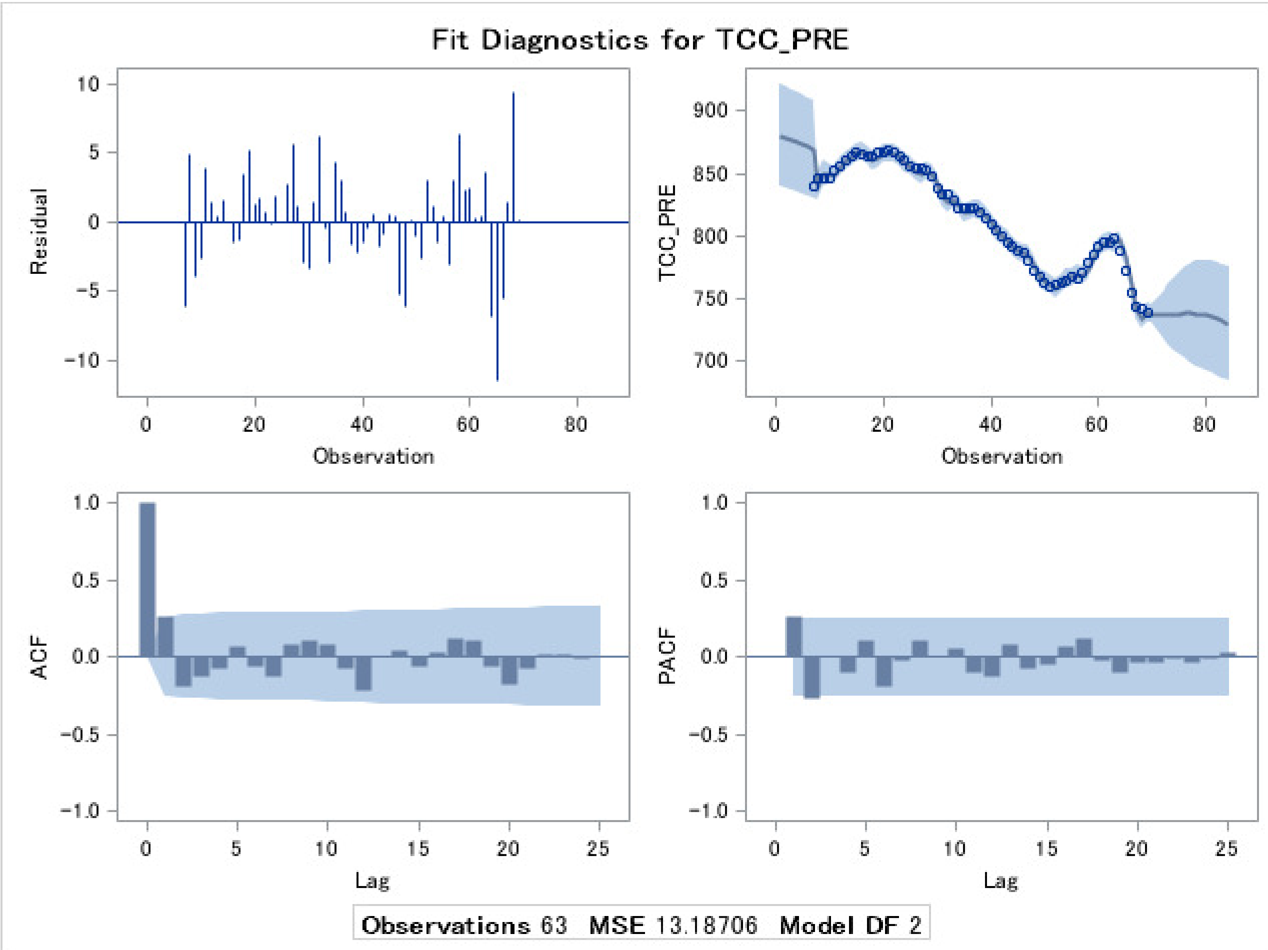
	1	2	3
1	0.2089275881	0	0
2	-0.713860338	0.7438059688	0
3	0.5449310082	-1.407931236	0.9220613444

Autoregressive parameters assumed given

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	882.4408	11.1944	78.83	<.0001
TIME	1	-1.8688	0.2632	-7.10	<.0001

H1 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure



H2 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H2 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	1248.15457	**DFE**	61
MSE	20.46155	**Root MSE**	4.52344
SBC	375.208585	**AIC**	370.922315
MAE	3.73604575	**AICC**	371.122315
MAPE	3.60813632	**HQC**	372.608126
Durbin-Watson	0.0768	**Total R-Square**	0.0847

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	106.0692	1.3203	80.34	<.0001
TIME	1	-0.0745	0.0313	-2.38	0.0207

Estimates of Autocorrelations

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
0	19.8120	1.000000	| |********************|
1	18.0499	0.911058	| |****************** |

Preliminary MSE	3.3675

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-0.911058	0.053225	-17.12

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.9111

Coefficients for First NLAG Observations

	1
1	0.4122792801

Algorithm converged.

H2 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	91.2707975	**DFE**	60
MSE	1.52118	**Root MSE**	1.23336
SBC	217.383344	**AIC**	210.95394
MAE	0.90775312	**AICC**	211.360719
MAPE	0.8773257	**HQC**	213.482656
Log Likelihood	-102.47697	**Transformed Regression R-Square**	0.0305
Durbin-Watson	0.5934	**Total R-Square**	0.9331
		Observations	63

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	97.5097	5.4126	18.02	<.0001
TIME	1	0.1458	0.1071	1.36	0.1788
AR1	1	-0.9695	0.0262	-36.97	<.0001

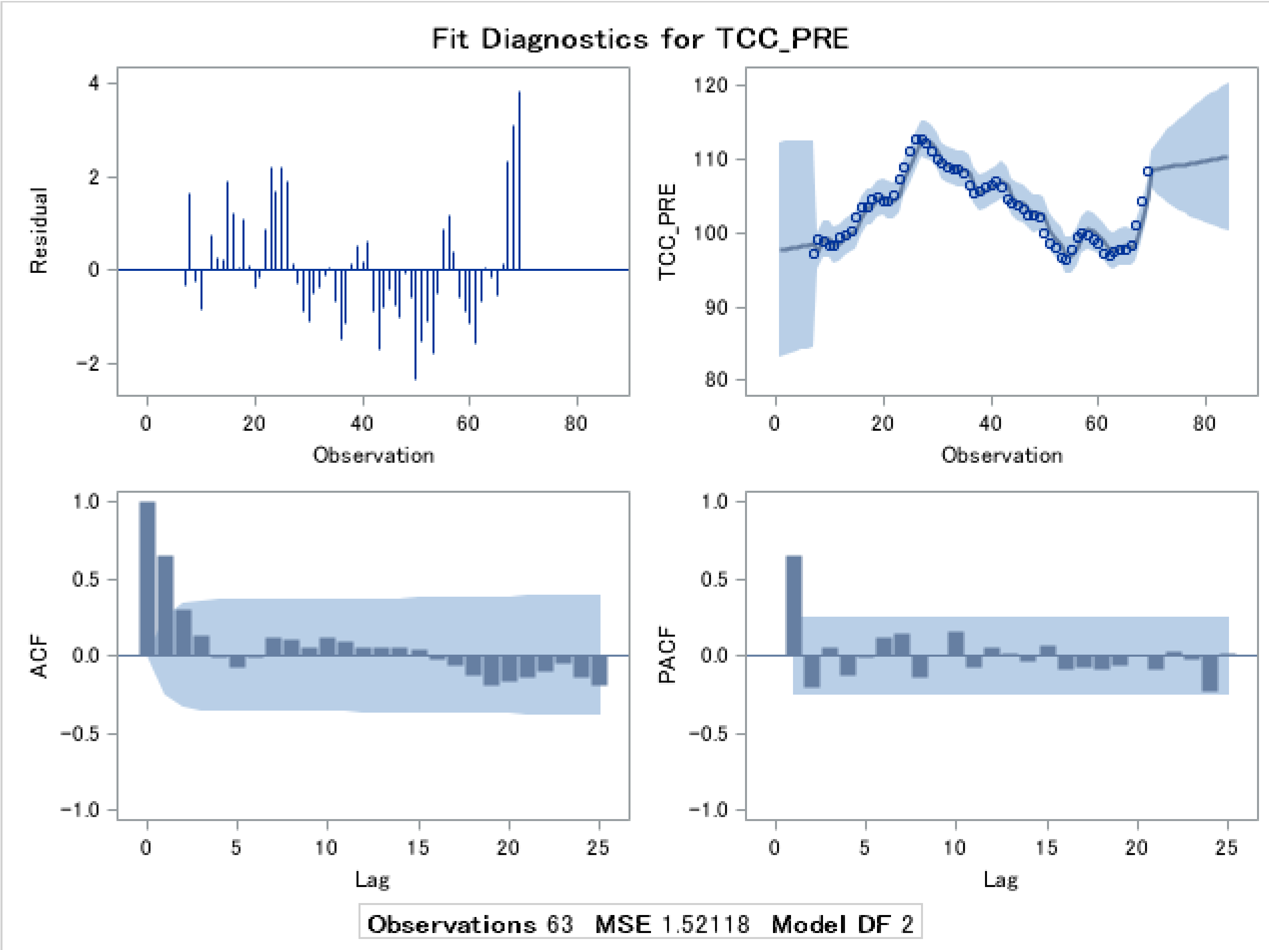
Expected Autocorrelations	
Lag	**Autocorr**
0	1.0000
1	0.9695

Coefficients for First NLAG Observations	
	1
1	0.2448980605

Autoregressive parameters assumed given					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	97.5097	5.3927	18.08	<.0001
TIME	1	0.1458	0.1057	1.38	0.1730

H2 FORECAST MODEL
MO 2010–2016 HOSP Data

The AUTOREG Procedure



H3 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H3 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	270.345284	**DFE**	61
MSE	4.43189	**Root MSE**	2.10521
SBC	278.836135	**AIC**	274.549866
MAE	1.74041983	**AICC**	274.749866
MAPE	7.84881726	**HQC**	276.235676
Durbin-Watson	0.0519	**Total R-Square**	0.6081

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	17.1750	0.6145	27.95	<.0001
TIME	1	0.1419	0.0146	9.73	<.0001

Estimates of Autocorrelations

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
0	4.2912	1.000000	| |********************|
1	4.1005	0.955554	| |******************* |
2	3.7801	0.880902	| |****************** |

Preliminary MSE	0.3218

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-1.309346	0.120937	-10.83
2	0.370249	0.120937	3.06

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.9556
2	0.8809

Coefficients for First NLAG Observations

	1	2
1	0.2738654022	0
2	-0.887644916	0.9289325897

Algorithm converged.

H3 FORECAST MODEL
MO 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	8.70485149	**DFE**	59
MSE	0.14754	**Root MSE**	0.38411
SBC	74.5457283	**AIC**	65.9731893
MAE	0.27747138	**AICC**	66.6628445
MAPE	1.20981289	**HQC**	69.3448108
Log Likelihood	-28.986595	**Transformed Regression R-Square**	0.2120
Durbin-Watson	1.5840	**Total R-Square**	0.9874
		Observations	63

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	15.9909	2.0556	7.78	<.0001
TIME	1	0.1773	0.0476	3.73	0.0004
AR1	1	-1.5648	0.1028	-15.22	<.0001
AR2	1	0.6070	0.1046	5.80	<.0001

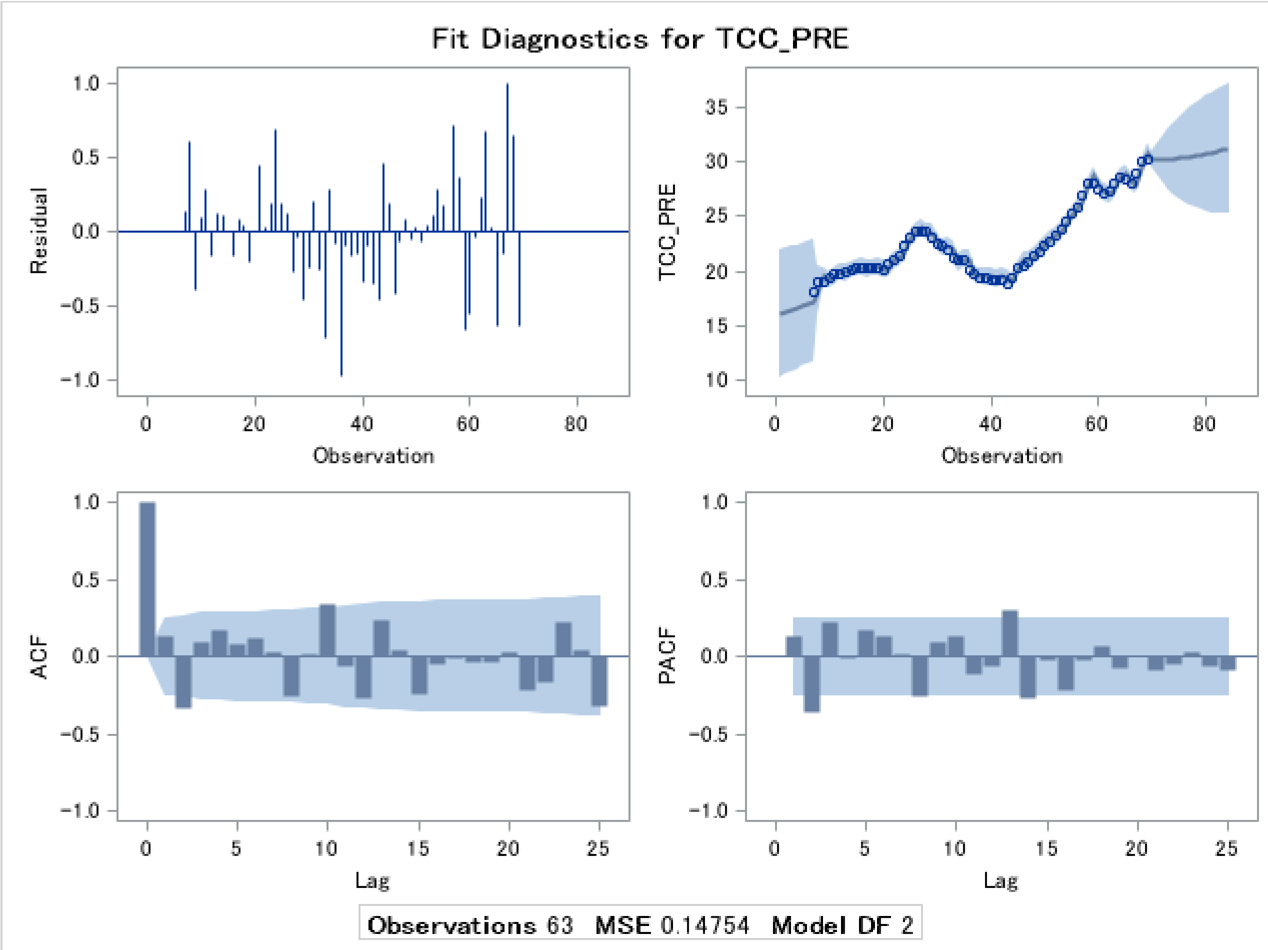
Expected Autocorrelations	
Lag	**Autocorr**
0	1.0000
1	0.9738
2	0.9168

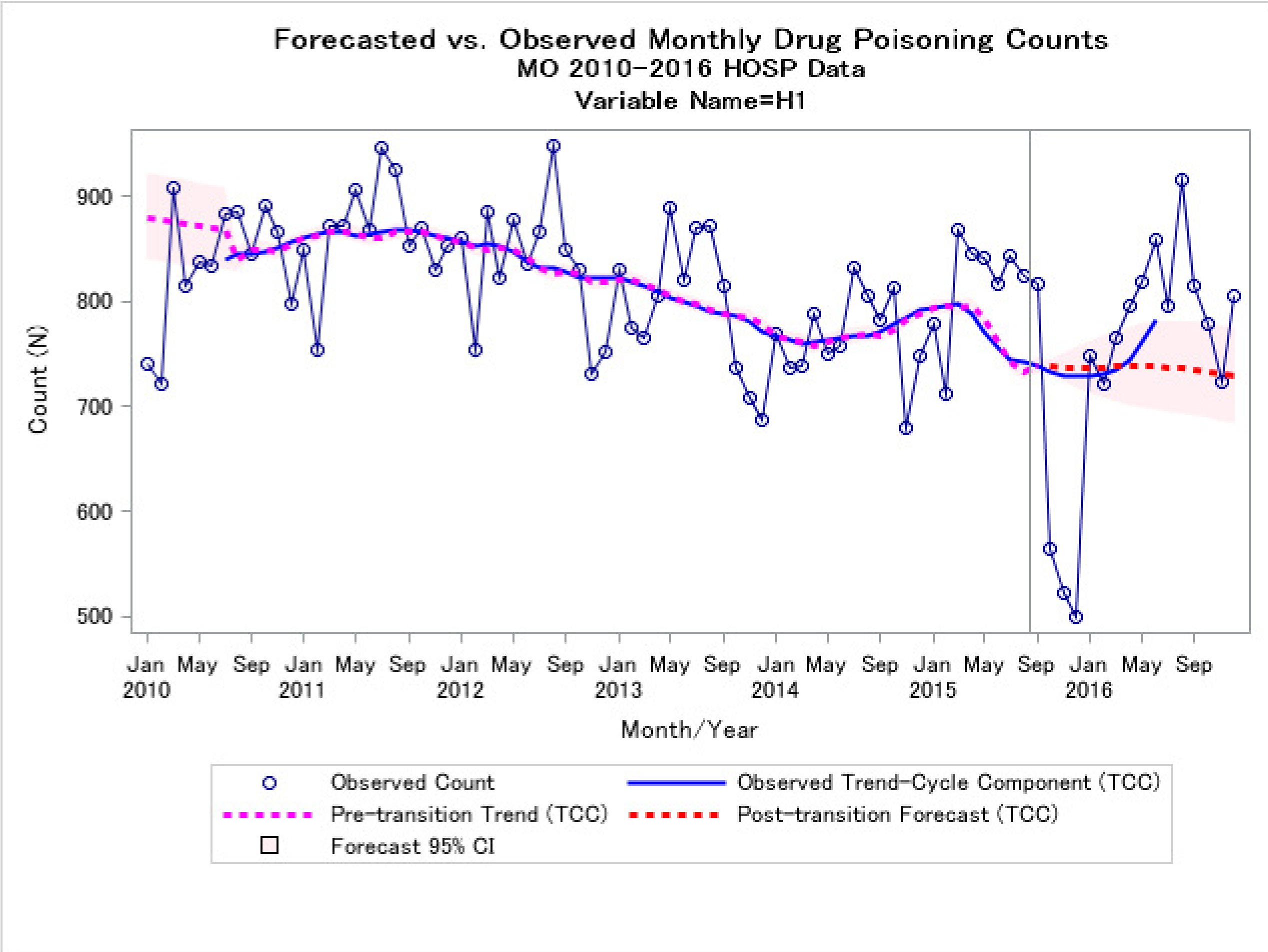
Coefficients for First NLAG Observations		
	1	**2**
1	0.1808294627	0
2	-0.773866831	0.7947132604

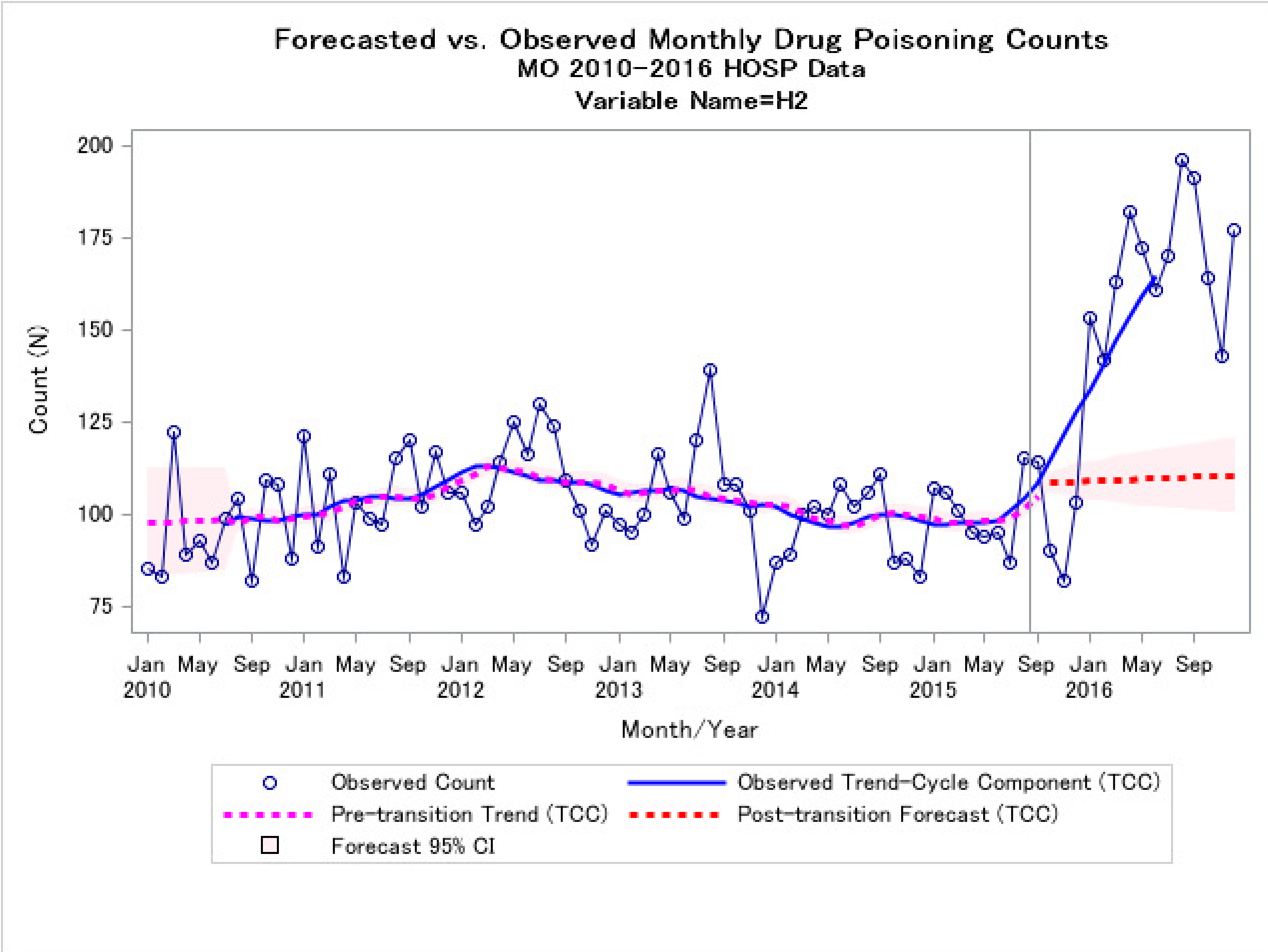
Autoregressive parameters assumed given					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	15.9909	1.9757	8.09	<.0001
TIME	1	0.1773	0.0445	3.98	0.0002

H3 FORECAST MODEL
MO 2010-2016 HOSP Data

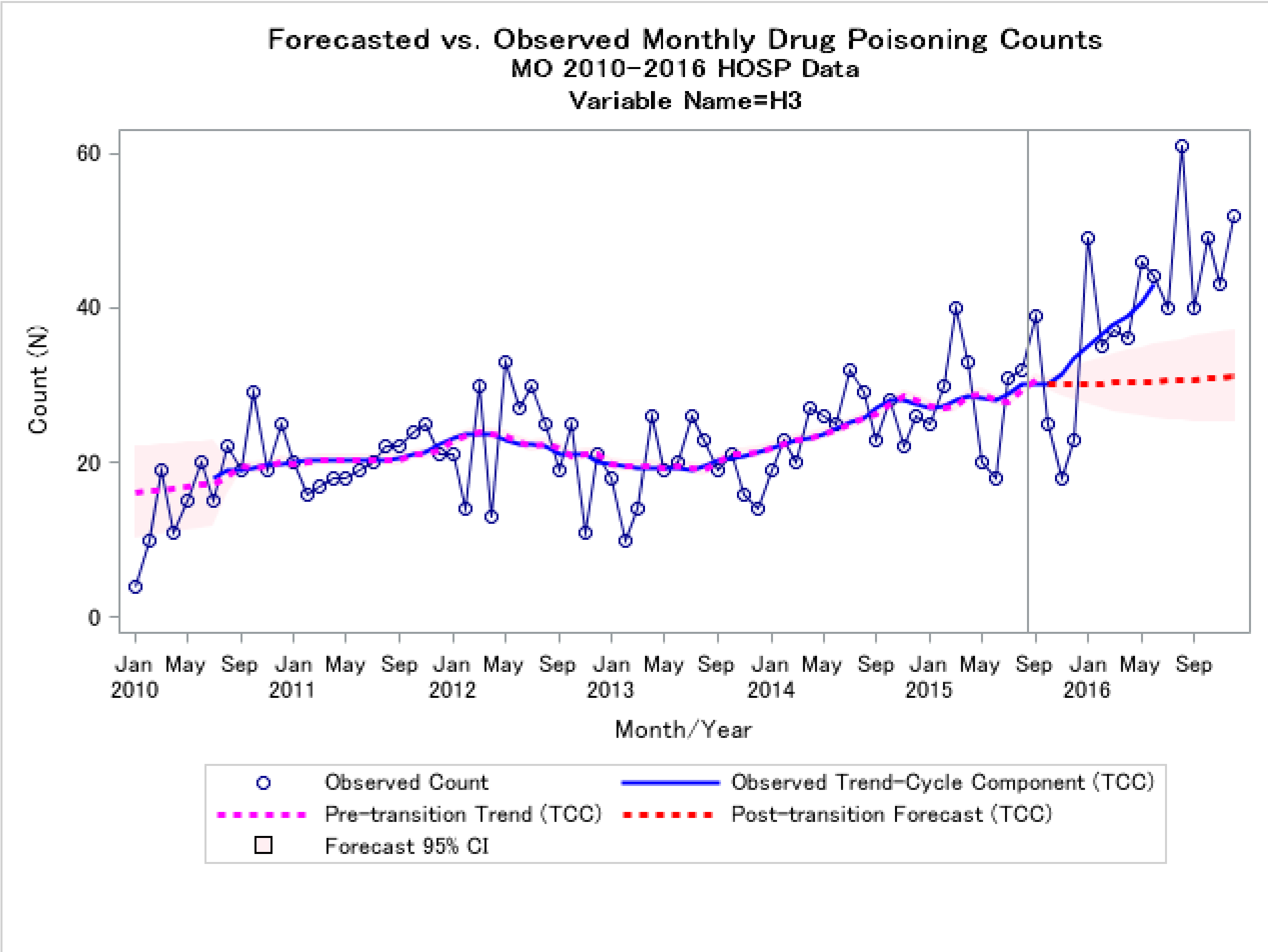
The AUTOREG Procedure




Forecasted vs. Observed Monthly Drug Poisoning Counts
MO 2010-2016 HOSP Data
Variable Name=H1
Count (N)
900
800
700
600
500
Jan 2010
May
Sep
Jan 2011
May
Sep
Jan 2012
May
Sep
Jan 2013
May
Sep
Jan 2014
May
Sep
Jan 2015
May
Sep
Jan 2016
May
Sep
Month/Year
Observed Count
Observed Trend-Cycle Component (TCC)
Pre-transition Trend (TCC)
Post-transition Forecast (TCC)
Forecast 95% CI



Forecasted vs. Observed Monthly Drug Poisoning Counts
MO 2010-2016 HOSP Data
Variable Name=H2
Count (N)
200
175
150
125
100
75
Jan 2010
May
Sep
Jan 2011
May
Sep
Jan 2012
May
Sep
Jan 2013
May
Sep
Jan 2014
May
Sep
Jan 2015
May
Sep
Jan 2016
May
Sep
Month/Year
Observed Count
Observed Trend-Cycle Component (TCC)
Pre-transition Trend (TCC)
Post-transition Forecast (TCC)
Forecast 95% CI


Forecasted vs. Observed Monthly Drug Poisoning Counts
MO 2010-2016 HOSP Data
Variable Name=H3
Count (N)
60
40
20
0
Jan 2010
May
Sep
Jan 2011
May
Sep
Jan 2012
May
Sep
Jan 2013
May
Sep
Jan 2014
May
Sep
Jan 2015
May
Sep
Jan 2016
May
Sep
Month/Year
Observed Count
Observed Trend-Cycle Component (TCC)
Pre-transition Trend (TCC)
Post-transition Forecast (TCC)
Forecast 95% CI