H1 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H1 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	882.852144	DFE	61
MSE	14.47299	Root MSE	3.80434
SBC	353.393974	AIC	349.107705
MAE	2.9551115	AICC	349.307705
MAPE	3.09753137	HQC	350.793516
Durbin-Watson	0.0660	Total R-Square	0.2329

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	101.0321	1.1104	90.99	<.0001
TIME	1	-0.1134	0.0264	-4.30	<.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	14.0135	1.000000	| |********************|
1	13.2973	0.948893	| |******************* |
2	12.0498	0.859869	| |***************** |

Preliminary MSE	1.1647

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-1.334992	0.118924	-11.23
2	0.406894	0.118924	3.42

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.9489
2	0.8599

Coefficients for First NLAG Observations

	1	2
1	0.2882920419	0
2	-0.866789811	0.9134751653

Algorithm converged.

H1 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	39.751642	DFE	59
MSE	0.67376	Root MSE	0.82083
SBC	169.792091	AIC	161.219552
MAE	0.60866369	AICC	161.909207
MAPE	0.63136014	HQC	164.591173
Log Likelihood	-76.609776	Transformed Regression R-Square	0.0178
Durbin-Watson	1.8617	Total R-Square	0.9655
		Observations	63

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	99.2537	3.4421	28.84	<.0001
TIME	1	-0.0807	0.0788	-1.02	0.3098
AR1	1	-1.5063	0.1099	-13.70	<.0001
AR2	1	0.5602	0.1114	5.03	<.0001

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.9655
2	0.8942

Coefficients for First NLAG Observations

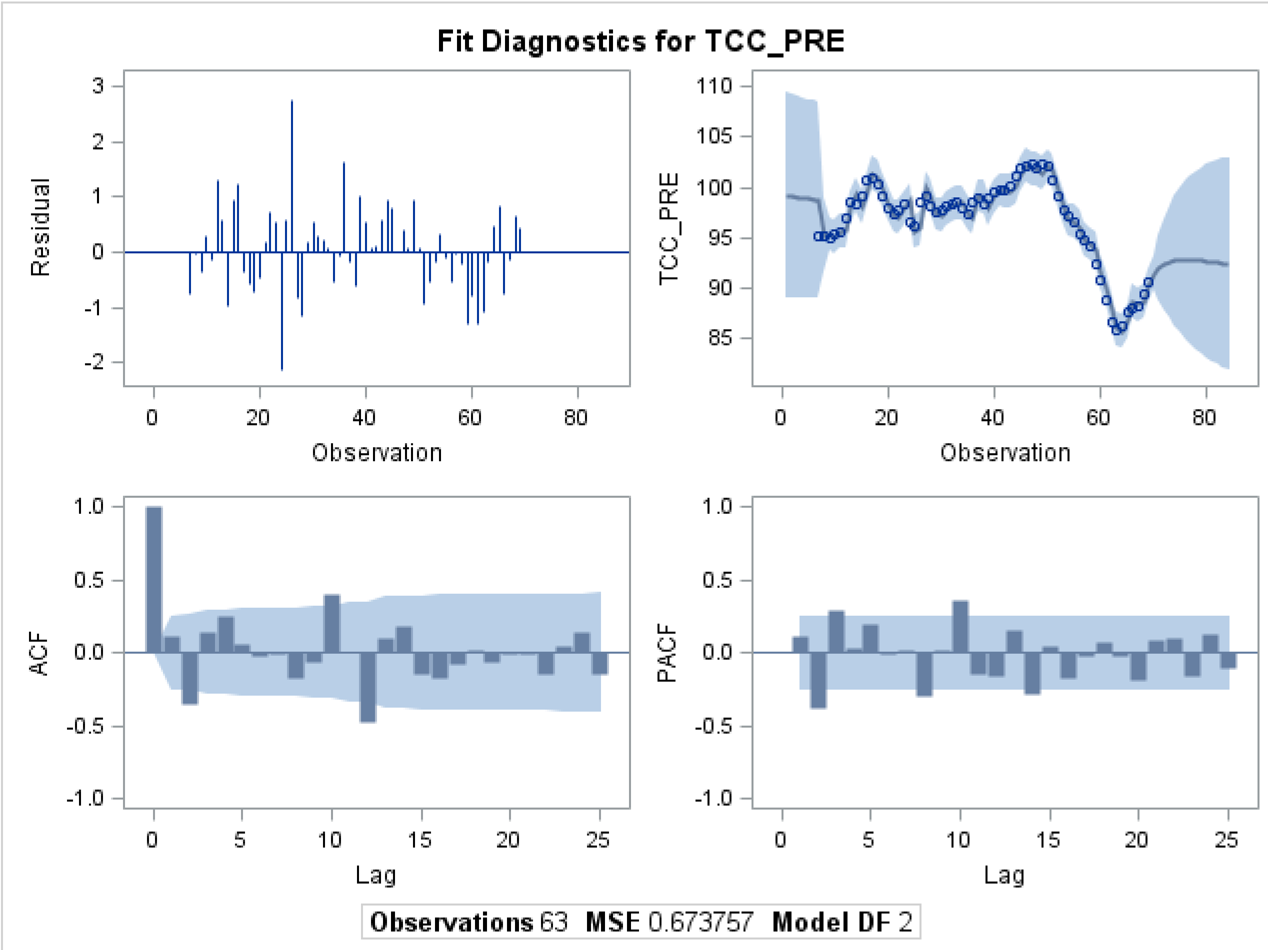
	1	2
1	0.2157601484	0
2	-0.799779617	0.8283718232

Autoregressive parameters assumed given

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	99.2537	3.4263	28.97	<.0001
TIME	1	-0.0807	0.0778	-1.04	0.3036

H1 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure



H2 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H2 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	101.979473	DFE	61
MSE	1.67179	Root MSE	1.29298
SBC	217.415644	AIC	213.129375
MAE	1.03688261	AICC	213.329375
MAPE	8.2590937	HQC	214.815185
Durbin-Watson	0.0867	Total R-Square	0.1820

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	13.5278	0.3774	35.85	<.0001
TIME	1	-0.0330	0.008958	-3.68	0.0005

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	1.6187	1.000000	| |********************|
1	1.4056	0.868344	| |***************** |

Preliminary MSE	0.3982

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-0.868344	0.064028	-13.56

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.8683

Coefficients for First NLAG Observations

	1
1	0.4959617124

Algorithm converged.

H2 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	8.36073864	DFE	60
MSE	0.13935	Root MSE	0.37329
SBC	67.0122577	AIC	60.5828535
MAE	0.28828898	AICC	60.9896332
MAPE	2.3146895	HQC	63.1115696
Log Likelihood	-27.291427	Transformed Regression R-Square	0.0268
Durbin-Watson	0.8011	Total R-Square	0.9329
		Observations	63

Parameter Estimates					
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	11.3640	1.9227	5.91	<.0001
TIME	1	0.0441	0.0417	1.06	0.2942
AR1	1	-0.9756	0.0285	-34.24	<.0001

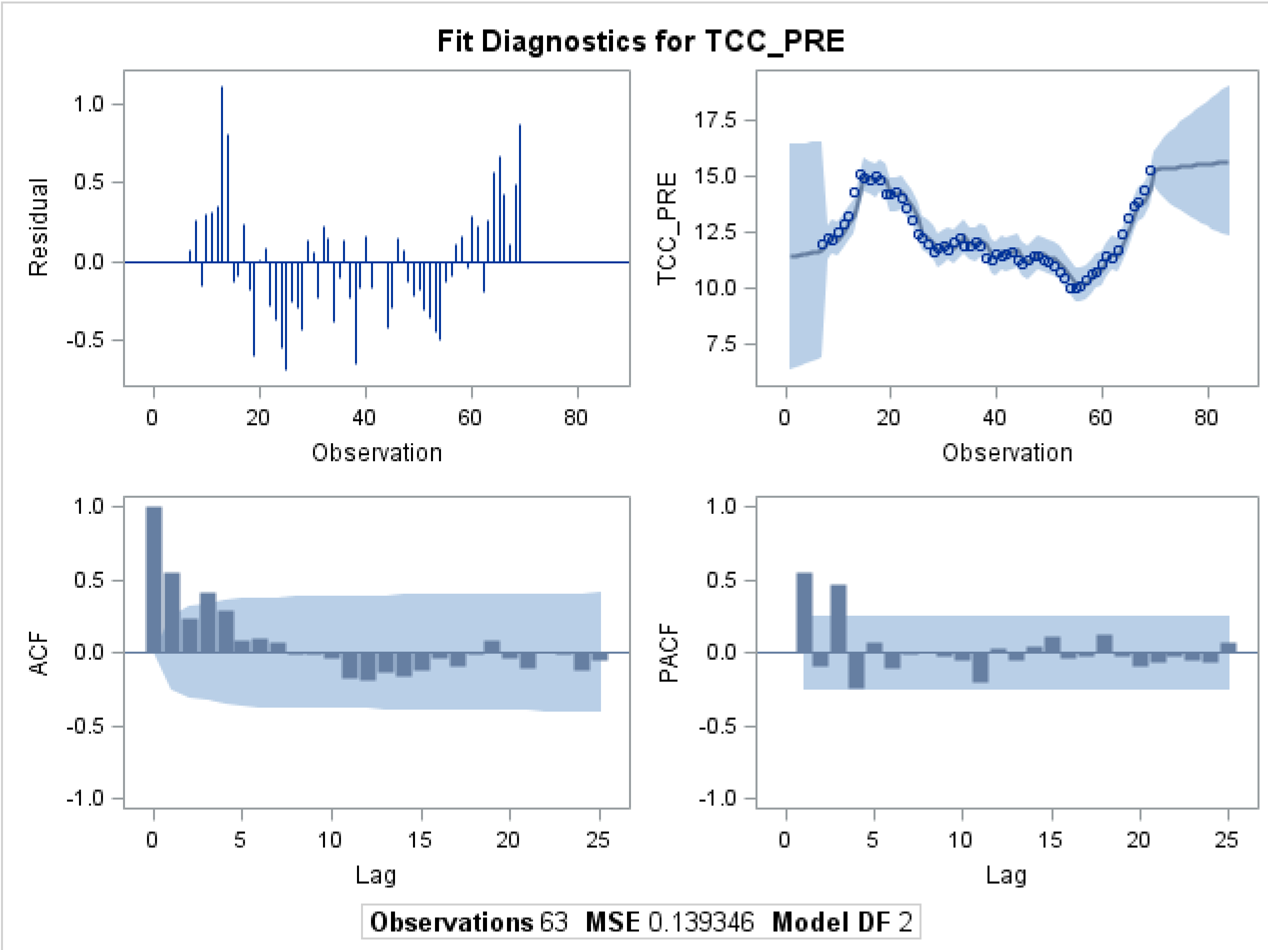
Expected Autocorrelations	
Lag	Autocorr
0	1.0000
1	0.9756

Coefficients for First NLAG Observations	
	1
1	0.2197379579

Autoregressive parameters assumed given					
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	11.3640	1.8242	6.23	<.0001
TIME	1	0.0441	0.0343	1.29	0.2028

H2 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure



H3 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Dependent Variable	TCC_PRE

H3 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	0.49131111	DFE	61
MSE	0.00805	Root MSE	0.08975
SBC	-118.71766	AIC	-123.00393
MAE	0.07140647	AICC	-122.80393
MAPE	27.0529682	HQC	-121.31812
Durbin-Watson	0.3121	Total R-Square	0.7024

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	0.0379	0.0262	1.45	0.1527
TIME	1	0.007460	0.000622	12.00	<.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	0.00780	1.000000	| |********************|
1	0.00647	0.829480	| |***************** |
2	0.00385	0.494151	| |********** |

Preliminary MSE	0.00149

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-1.345006	0.101991	-13.19
2	0.621505	0.101991	6.09

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.8295
2	0.4942

Coefficients for First NLAG Observations

	1	2
1	0.4375630059	0
2	-0.649823121	0.7834101559

Algorithm converged.

H3 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	0.08116929	DFE	59
MSE	0.00138	Root MSE	0.03709
SBC	-221.55226	AIC	-230.1248
MAE	0.02755722	AICC	-229.43514
MAPE	10.4978301	HQC	-226.75318
Log Likelihood	119.062398	Transformed Regression R-Square	0.5073
Durbin-Watson	1.7103	Total R-Square	0.9508
		Observations	63

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	0.0397	0.0403	0.98	0.3295
TIME	1	0.007435	0.000958	7.76	<.0001
AR1	1	-1.3841	0.0982	-14.09	<.0001
AR2	1	0.6493	0.1000	6.49	<.0001

Expected Autocorrelations

Lag	Autocorr
0	1.0000
1	0.8392
2	0.5121

Coefficients for First NLAG Observations

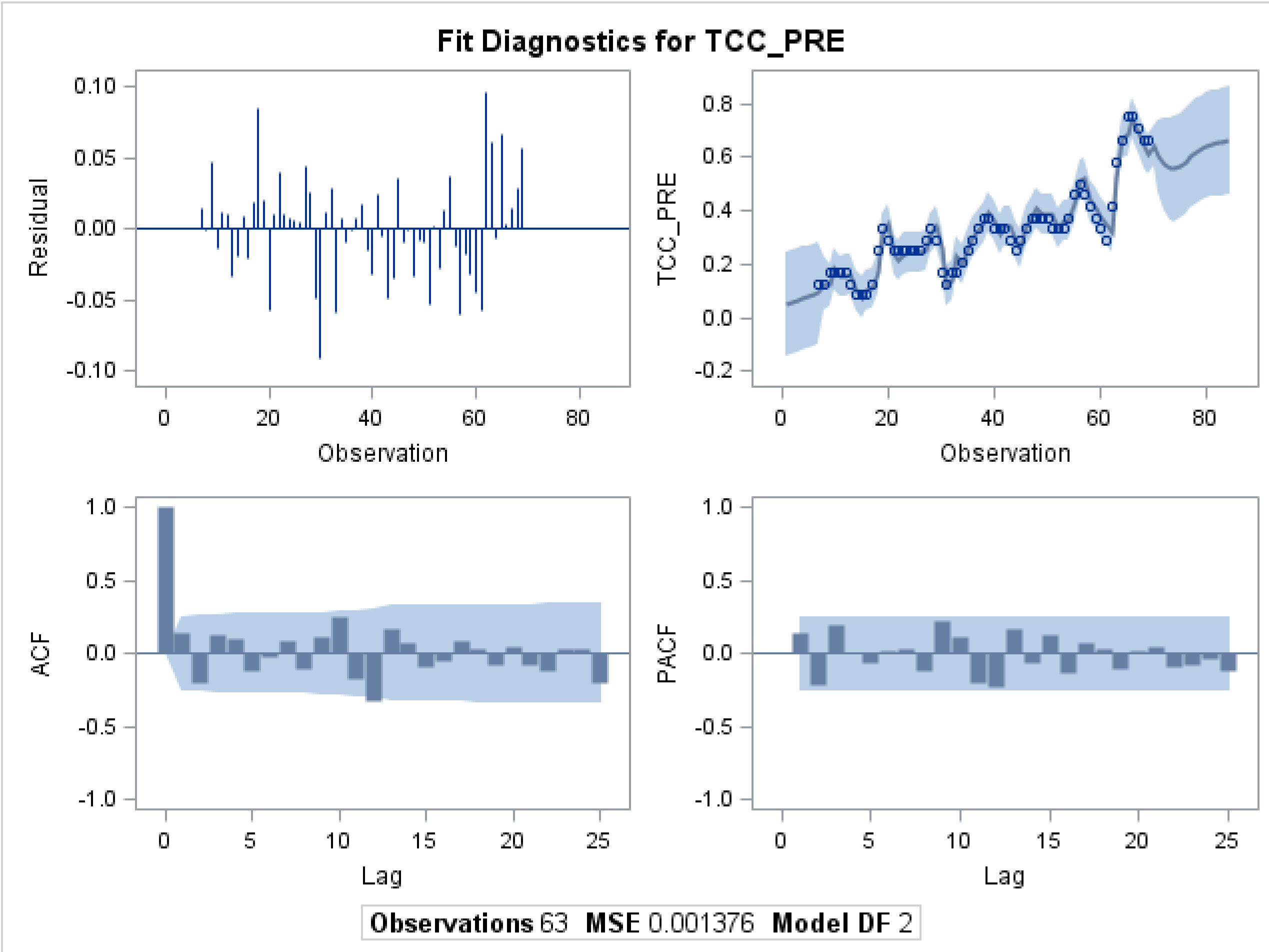
	1	2
1	0.4136184867	0
2	-0.638180672	0.7604964318

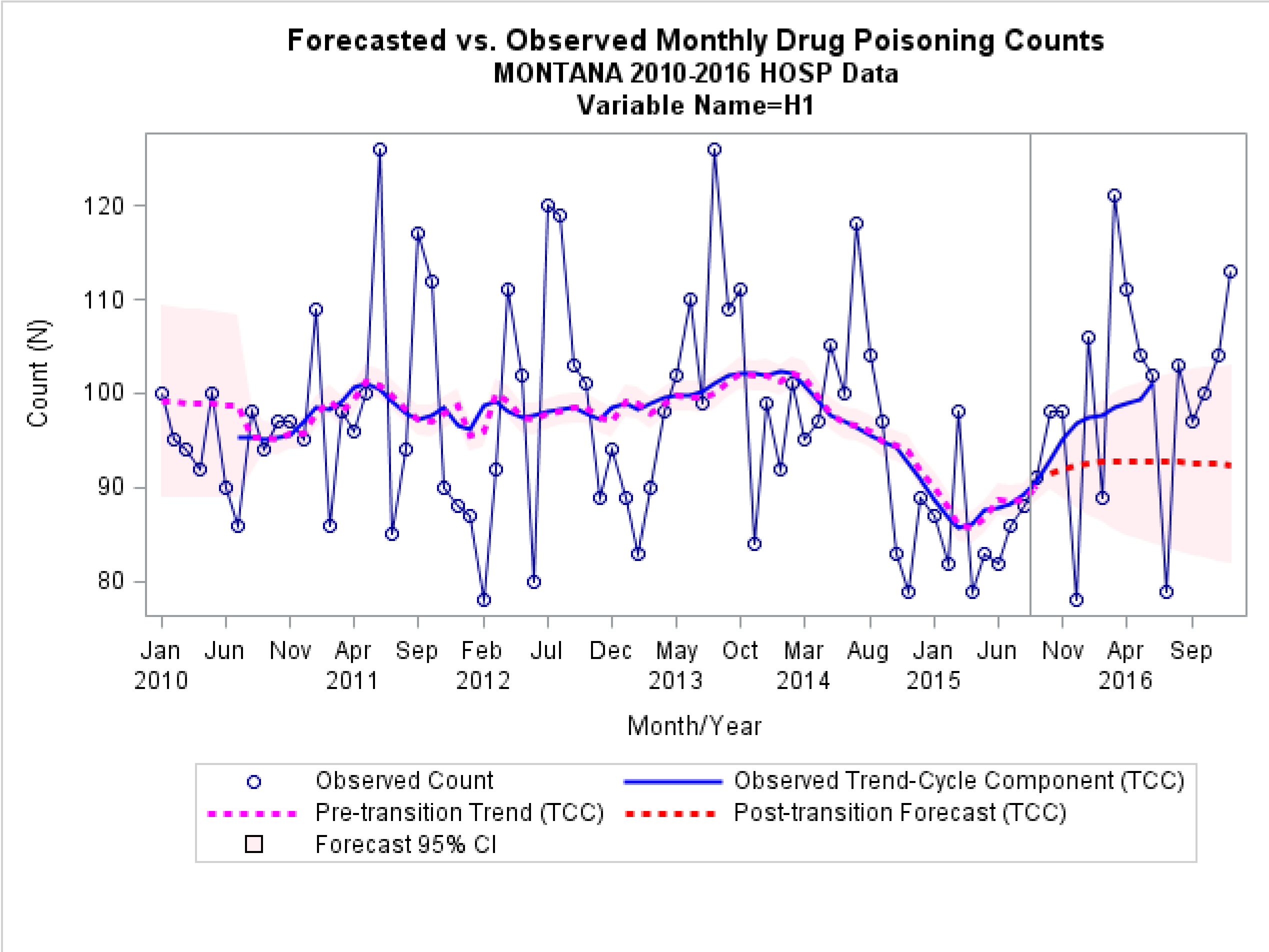
Autoregressive parameters assumed given

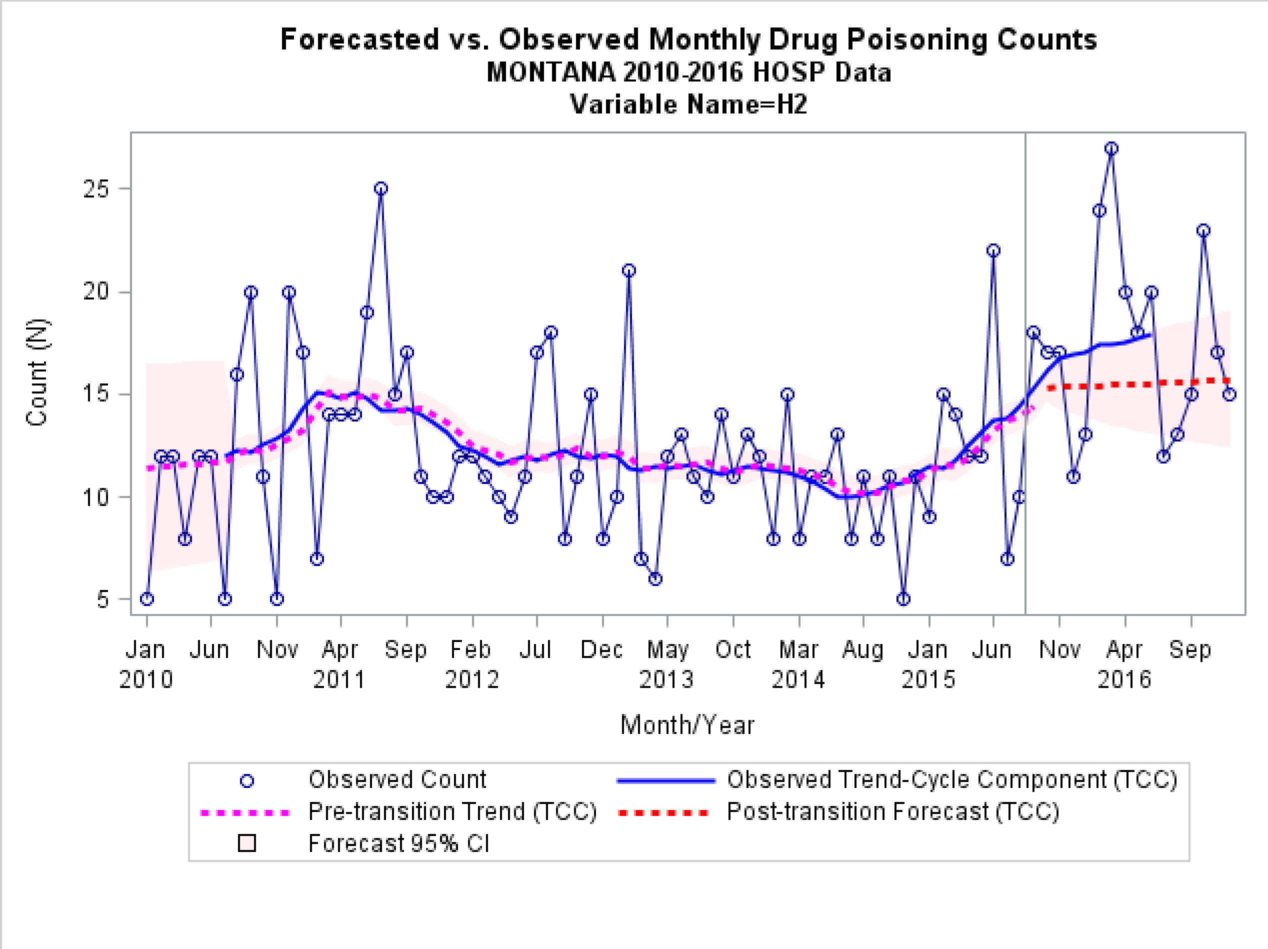
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	0.0397	0.0403	0.98	0.3287
TIME	1	0.007435	0.000954	7.79	<.0001

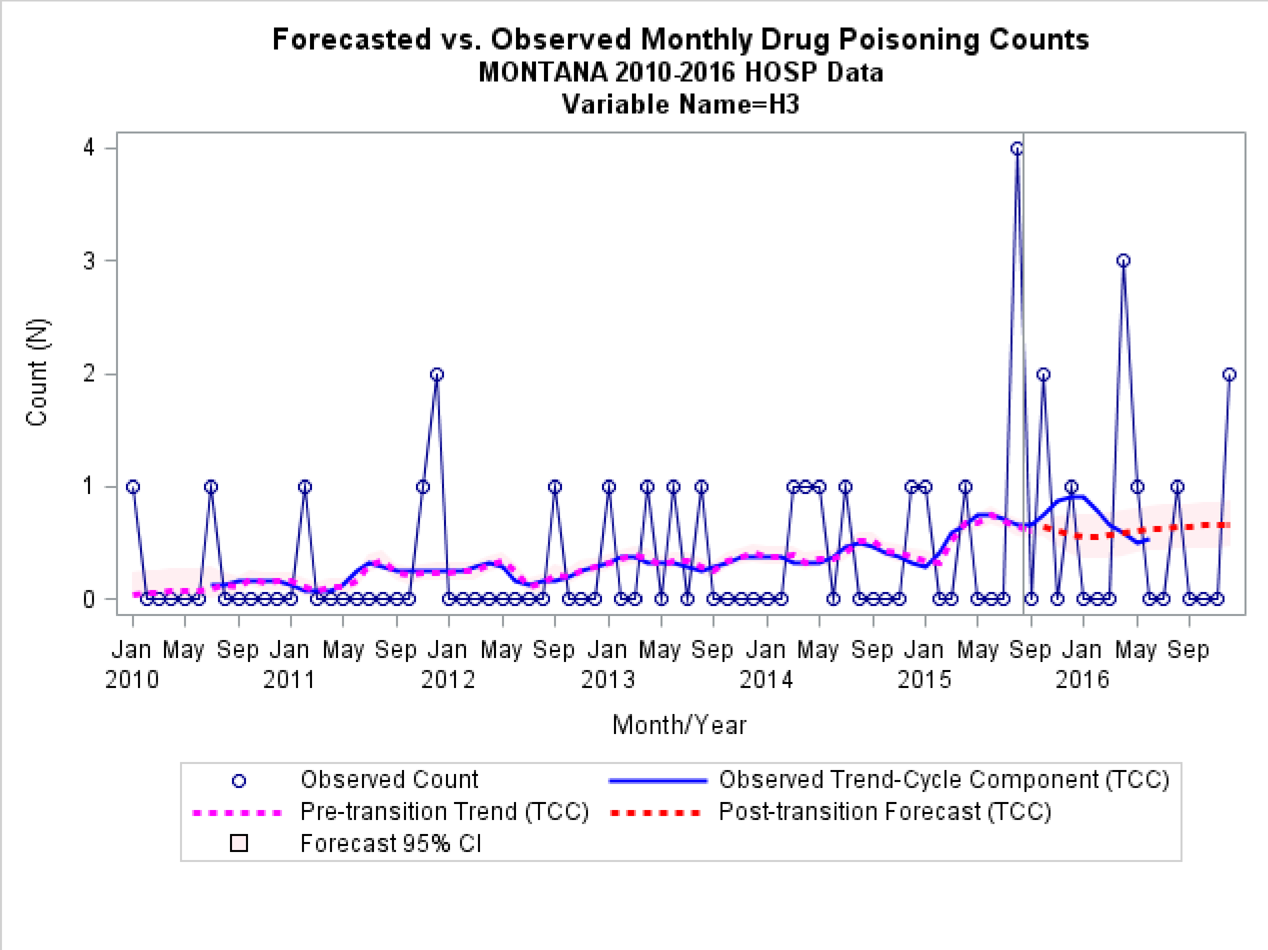
H3 FORECAST MODEL
MONTANA 2010-2016 HOSP Data

The AUTOREG Procedure




Forecasted vs. Observed Monthly Drug Poisoning Counts
MONTANA 2010-2016 HOSP Data
Variable Name=H1
Count (N)
120
110
100
90
80
Jan 2010
Jun
Nov
Apr 2011
Sep
Feb 2012
Jul
Dec
May 2013
Oct
Mar 2014
Aug
Jan 2015
Jun
Nov
Apr 2016
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
MONTANA 2010-2016 HOSP Data
Variable Name=H2
Count (N)
25
20
15
10
5
Jan 2010
Jun
Nov
Apr 2011
Sep
Feb 2012
Jul
Dec
May 2013
Oct
Mar 2014
Aug
Jan 2015
Jun
Nov
Apr 2016
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
MONTANA 2010-2016 HOSP Data
Variable Name=H3
Count (N)
0
1
2
3
4
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