Session Parameters

Input File Tab:

Input File Name: d:\dropbox\work\opioid_trends\joinpoint_analysis\02_opioid_rate_ratio.csv

Delimiters: Comma Missing Character: NA File Contains Column Headers: Y

By Variables: No by variables

Independent Variable: year

Shift Data Points: 0

Dependent Variable:

Run Type: Provided in Data File
Type of Variable: Other

Heteroscedastic Error Option:
Standard Error (Provided)

Log Transformation: Yes {ln(y) = xb}

Count/Numerator: opioid_rr
Pop/Denominator:
Rate/Proportion/Pct:
Standard Error: opioid_rr_sd
Adjustment Variable:
Standard Population:
Delay Variable:
Delay Standard Error:

Advanced Tab:

Method: Grid Search

Autocorrelated Errors Options: Fit an uncorrelated errors model

AAPC Confidence Intervals: Parametric # of Resamples: Not Applicable

Ranges: Entire Range ,

Additional Ranges:

Number of Observations:

Number Joinpoints: Min: 0 Max: 5

Minimum number of observations from a joinpoint to either end of the data: 3

Minimum number of observations between two points: 4

Number of points to place between adjacent observed x valeus in the grid search: 0

Model Selection Method: Permutation Test

Permutation Test Options:

Overall significance level for the permutations tests: 0.05

Number of randomly permuted data sets for permutation test: 9999

Early Stopping Options: Not Applicable

Jump Model / Comparability Ratio: None

Jump Location: -1 Comparability Ratio: -1 Variance of CR: -1

Comparison Tab:

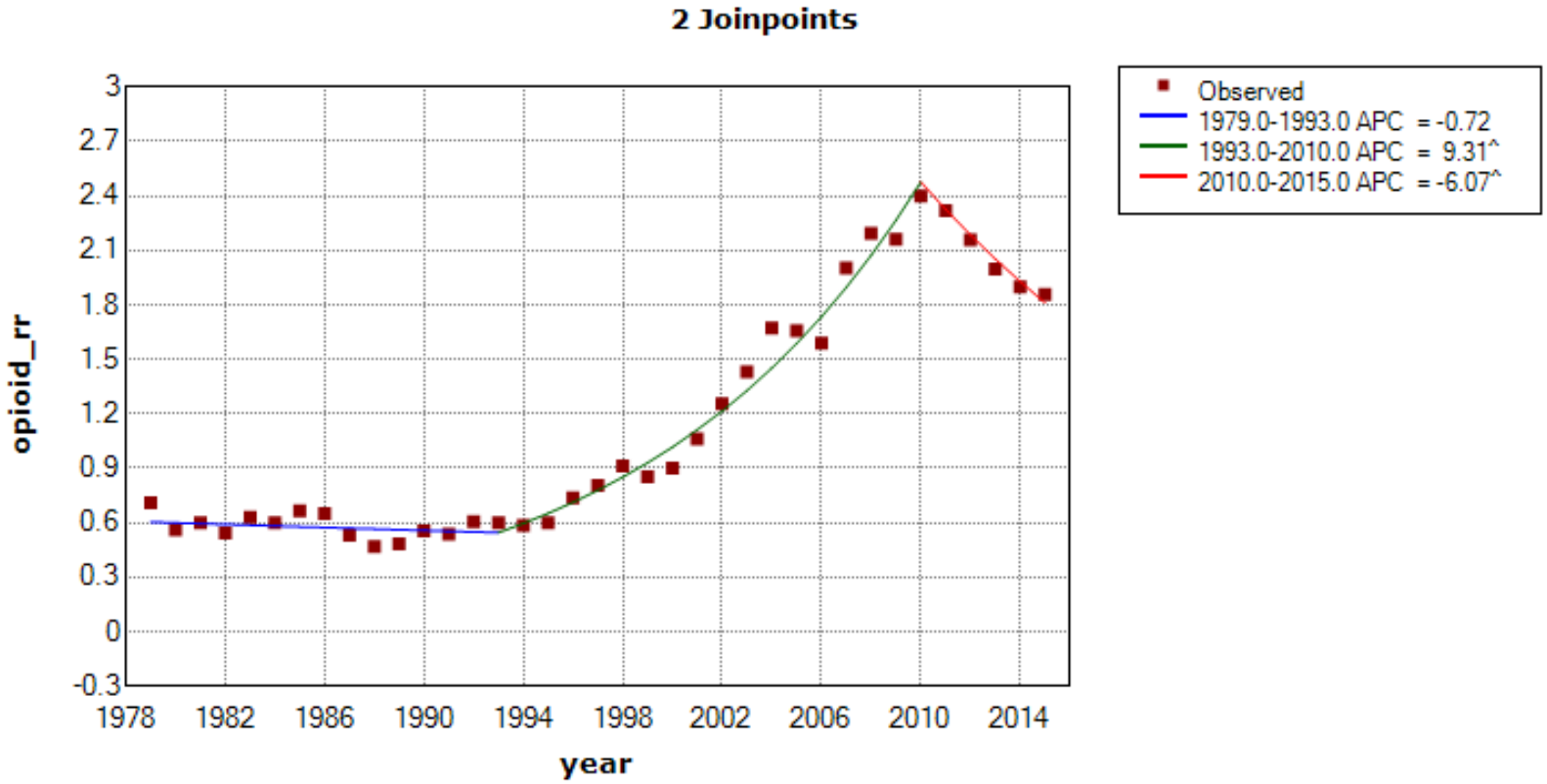
Comparison Type: None

Pairwise Comparison: Not Applicable

Significance level: Not Applicable

Max number of randomly permuted data sets: Not Applicable

Number of Joinpoints: 2 (Final Selected Model)



^ Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 Joinpoints.

, Number of Joinpoints: 2 (Final Selected Model) continued...

Observed and Modeled Data Points

X Value	Observed Y Value	Standard Error	Modeleded Y Value	JP Location	APC
1979	0.71075	0.06482	0.60364		-0.72483
1980	0.55952	0.04918	0.59926		-0.72483
1981	0.59866	0.05179	0.59492		-0.72483
1982	0.54236	0.04028	0.59061		-0.72483
1983	0.63004	0.04976	0.58633		-0.72483
1984	0.59891	0.04377	0.58208		-0.72483
1985	0.66477	0.04497	0.57786		-0.72483
1986	0.65005	0.04086	0.57367		-0.72483
1987	0.53020	0.03416	0.56951		-0.72483
1988	0.46851	0.02543	0.56538		-0.72483
1989	0.48473	0.02453	0.56128		-0.72483
1990	0.55519	0.03041	0.55722		-0.72483
1991	0.53755	0.02770	0.55318		-0.72483
1992	0.60606	0.02770	0.54917		-0.72483
1993	0.59991	0.02347	0.54519	Joinpoint 1	
1994	0.58490	0.02250	0.59595		9.31132^
1995	0.60058	0.02207	0.65144		9.31132^
1996	0.73611	0.02837	0.71210		9.31132^
1997	0.80487	0.02999	0.77841		9.31132^

, Number of Joinpoints: 2 (Final Selected Model) continued...

Observed and Modeled Data Points

X Value	Observed Y Value	Standard Error	Modeleded Y Value	JP Location	APC
1998	0.91281	0.03304	0.85088		9.31132^
1999	0.85296	0.02727	0.93011		9.31132^
2000	0.90141	0.02862	1.01672		9.31132^
2001	1.06204	0.03355	1.11139		9.31132^
2002	1.25404	0.03756	1.21487		9.31132^
2003	1.43065	0.04311	1.32799		9.31132^
2004	1.67317	0.05194	1.45165		9.31132^
2005	1.65754	0.04912	1.58682		9.31132^
2006	1.58904	0.04245	1.73457		9.31132^
2007	2.00443	0.05709	1.89608		9.31132^
2008	2.19426	0.06297	2.07263		9.31132^
2009	2.16113	0.06025	2.26562		9.31132^
2010	2.39817	0.06810	2.47658	Joinpoint 2	
2011	2.31859	0.06229	2.32629		-6.06850^
2012	2.15739	0.05559	2.18512		-6.06850^
2013	1.99670	0.04762	2.05251		-6.06850^
2014	1.89878	0.04146	1.92796		-6.06850^
2015	1.85749	0.03720	1.81096		-6.06850^

^ Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.

, Number of Joinpoints: 2 (Final Selected Model) continued...

Model Statistics							
Cohort	**Number of Joinpoints**	**Number of Observations**	**Number of Parameters**	**Degrees of Freedom**	**Sum of Squared Errors**	**Mean Squared Error**	**Autocorrelation Parameter**
	2	37	6	31	137.82374	4.44593	Uncorrelated

Estimated Joinpoints				
Cohort	**Joinpoint**	**Estimate**	**Lower CI**	**Upper CI**
	1	1993	1989	1996
	2	2010	2007	2011

Estimated Regression Coefficients (Beta)					
Standard Parameterization					
Cohort	**Parameter**	**Param Estimate**	**Standard Error**	**Test Statistic (t)**	**Prob > |t|**
	Intercept 1	13.891913	18.223418	0.762311	0.452030
	Slope 1	-0.007275	0.009171	-0.793268	0.434065
	Slope 2 - Slope 1	0.096304	0.009882	9.745103	0.000000
	Slope 3 - Slope 2	-0.151634	0.015842	-9.571900	0.000000

- The statistic could not be calculated.

General Parameterization					
Cohort	**Parameter**	**Param Estimate**	**Standard Error**	**Test Statistic (t)**	**Prob > |t|**
	Intercept 1	13.891913	18.223418	0.762311	0.452030
	Intercept 2	-178.042881	7.374160	-24.144158	0.000000
	Intercept 3	126.741728	31.020241	4.085775	0.000317
	Slope 1	-0.007275	0.009171	-0.793268	0.434065
	Slope 2	0.089030	0.003683	24.176210	0.000000
	Slope 3	-0.062604	0.015408	-4.063209	0.000337

- The statistic could not be calculated.

, Number of Joinpoints: 2 (Final Selected Model) continued...

Covariance Matrix							
Cohort	**Parameter**	**Intercept 1**	**Intercept 2**	**Intercept 3**	**Slope 1**	**Slope 2**	**Slope 3**
	Intercept 1	332.092946	332.092946	-0.167119	0.000000	0.000000	0.000000
	Intercept 2	-0.167119	-0.167119	0.000084	0.000000	0.000000	0.000000
	Intercept 3	0.000000	0.000000	0.000000	54.378232	-0.027156	0.000000
	Slope 1	0.000000	0.000000	0.000000	-0.027156	0.000014	0.000000
	Slope 2	0.000000	0.000000	0.000000	0.000000	0.000000	962.255371
	Slope 3	0.000000	0.000000	0.000000	0.000000	0.000000	-0.477948

Correlation Matrix							
Cohort	**Parameter**	**Intercept 1**	**Intercept 2**	**Intercept 3**	**Slope 1**	**Slope 2**	**Slope 3**
	Intercept 1	1.000000	-0.999998	0.000000	0.000000	0.000000	0.000000
	Intercept 2	-0.999998	1.000000	0.000000	0.000000	0.000000	0.000000
	Intercept 3	0.000000	0.000000	1.000000	-0.999998	0.000000	0.000000
	Slope 1	0.000000	0.000000	-0.999998	1.000000	0.000000	0.000000
	Slope 2	0.000000	0.000000	0.000000	0.000000	1.000000	-1.000000
	Slope 3	0.000000	0.000000	0.000000	0.000000	-1.000000	1.000000

Estimated Joinpoints				
Cohort	**Joinpoint**	**Estimate**	**Lower CI**	**Upper CI**
	1	1993	1989	1996
	2	2010	2007	2011

Annual Percent Change (APC)								
Cohort	**Segment**	**Lower EndPoint**	**Upper Endpoint**	**APC**	**Lower CI**	**Upper CI**	**Test Statistic (t)**	**Prob > |t|**
	1	1979	1993	-0.725	-2.569	1.155	-0.793	0.434
	2	1993	2010	9.311^	8.491	10.138	24.176	0.000
	3	2010	2015	-6.069^	-8.982	-3.061	-4.063	0.000

^ Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.

- The statistic could not be calculated.

, Number of Joinpoints: 2 (Final Selected Model) continued...

Average Annual Percent Change (AAPC)								
Cohort	**Range**	**Lower EndPoint**	**Upper Endpoint**	**AAPC**	**Lower CI**	**Upper CI**	**Test Statistic ***	**P-Value ***
	Full Range	1979	2015	3.099^	2.192	4.014	6.770	0.000

^ Indicates that the AAPC is significantly different from zero at the alpha = 0.05 level. Parametric method used to calculate CIs.
* If the AAPC is within one segment, the t-distribution is used. Otherwise, the normal (z) distribution is used.

- The statistic could not be calculated.

Test for Number of Joinpoints								
Cohort	**Test Number**	**Null Hypothesis**	**Alternate Hypothesis**	**Number Degrees of Freedom**	**Denominator Degrees of Freedom**	**Number of Permutations**	**P-Value**	**Significance Level ~**
	#1	0 Joinpoint(s)	5 Joinpoint(s) *	10	25	10000	0.0001000	0.0100000
	#2	1 Joinpoint(s)	5 Joinpoint(s) *	8	25	10000	0.0001000	0.0125000
	#3	2 Joinpoint(s) *	5 Joinpoint(s)	6	25	10000	0.0564000	0.0166667
	#4	2 Joinpoint(s) *	4 Joinpoint(s)	4	27	10000	0.0738000	0.0166667
	#5	2 Joinpoint(s) *	3 Joinpoint(s)	2	29	10000	0.2914000	0.0166667
Final Selected Model: 2 Joinpoint(s)								

* Final Selected Model

~ Significance level for individual test