Collusion or Illusion: A Tri-State Analysis of Gas Prices

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Introduction to the Study

Selected Study Cities

Contrary to some reports, Eau Claire's gas prices are not influenced by the city's position near the end of a gas pipeline. Rather, the city is situated near the middle of the pipeline.

Price Collusion Investigation

Accusations of price fixing lead to a 2011 investigation by the Wisconsin Department of Justice. However, the department found no evidence of explicit price collusion.

Research Objectives

1. To identify locational factors and market conditions that could explain Eau Claire's purportedly high and uniform retail gas prices.

2. To access the impact of Wisconsin's Minimum Mark-up Law on price dispersion.

Wisconsin's Minimum Markup Law (The Unfair Sales Act)

A Brief Synopsis:

-Motor fuel retailers and wholesalers are required to sell gasoline at a"minimum markup" above cost.

-Retailers must markup 6% above certain costs or 9.18% over the average wholesale price, whichever is greater (Marely & Stein, 2010).

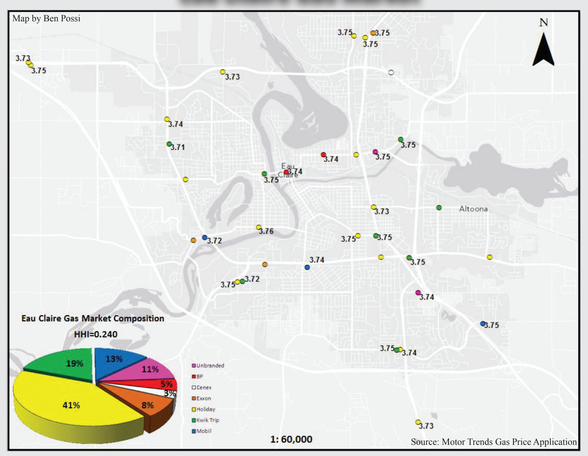
-Penalties include a $50-500 fine per day for the first offense and a $200-2500 fine per day for the second offense.

-Enacted in Wisconsin in 1939 to prevent predatory pricing and to support small, unincorporated retailers.

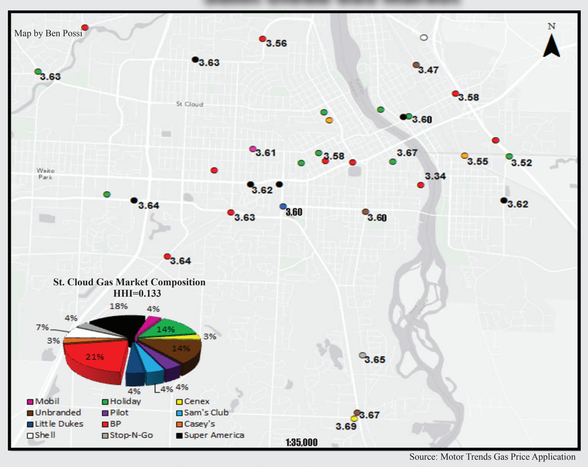
-Some reports suggest the law harms competition and causes significantly higher prices for consumers.

Comparing Gas Markets in Study Cities

Eau Claire Gas Market



Saint Cloud Gas Market



How is Eau Claire's gas market unique?

1. Very low seller density in comparison to the other study cities.

2. Moderate/High market concentration, as indicated by the HHI.

3. Lowest amount of price dispersion out of all study cities.

4. Highest profit margins on gasoline sales.

5. No significant linear relationship between seller density and price dispersion.

Market Conditions by City

City	Average Seller Density	Average Highway Distance	HHI	Standard Deviation (Cents)	Average Price (Dollars)
Eau Claire	1.91	0.11	0.240	1.60	3.74
Wausau	2.23	0.12	0.139	1.80	3.78
Stevens Point	2.38	0.04	0.195	1.50	3.72
Hudson	3.33	0.11	0.163	3.70	3.70
St. Cloud	6.43	0.27	0.133	7.50	3.60
Mankato	3.25	0.10	0.146	5.30	3.71
Albert Lea	3.57	0.09	0.172	2.90	3.62
*Mason City	3.13	0.12	0.253	5.00	3.52
Ames	4.78	0.35	0.143	5.80	3.66
Iowa City	5.97	0.27	0.171	9.70	3.75

* =missing or incomplete data

Methodology

Pricing Data Acquisition

Collection Period: October 11th - October 25th.

Data Acquisition of Retail Prices: MotorTrends, AAA Fuel Finder

Data Acquisition of Wholesale Prices: Oil Pricing Information Service (OPIS)

Brand	Address	Regular	Plus	Premium	Diesel
Holiday	4304 Jeffers Rd Eau Claire, WI, 54703	$3.449 Lowest Price	$3.449 Lowest Price	N/A	$4.049 Lowest Pr
Holiday	6123 Truax Ln Eau Claire, WI, 54703	$3.449	N/A	N/A	$4.099
Kwik Trip	100 W Madison St Eau Claire, WI, 54703	$3.449	$3.449	N/A	N/A
Kwik Trip	2327 N Clairemont Ave Eau Claire, WI, 54703	$3.449	$3.449	N/A	N/A
Kwik Trip	2135 Brackett Ave Eau Claire, WI, 54701	$3.449	$3.449	N/A	N/A
Kwik Trip	2715 Golf Rd Eau Claire, WI, 54701	$3.449	$3.449	N/A	N/A
Kwik Trip	900 Mckinley Rd Eau Claire, WI, 54703	$3.449	$3.449	N/A	N/A
Holiday	5511 State Road 93 Eau Claire, WI, 54701	$3.449	$3.449	N/A	$4.049
Holiday	2943 Western Ave Eau Claire, WI, 54703	$3.449	$3.449	$3.649 Lowest Price	$4.049
Holiday	6126 Texaco Dr Eau Claire, WI, 54703	$3.449	$3.449	N/A	$4.049

Data from the Motortrends Gas Price Application

Comparing Markets with The Herfindahl-Hirschman Index (HHI)

-Measures the size of firms in relation to the industry.
-Indicates the amount of competition and concentration.
-Used by the Department of Justice to study market regulations.

Calculating the HHI

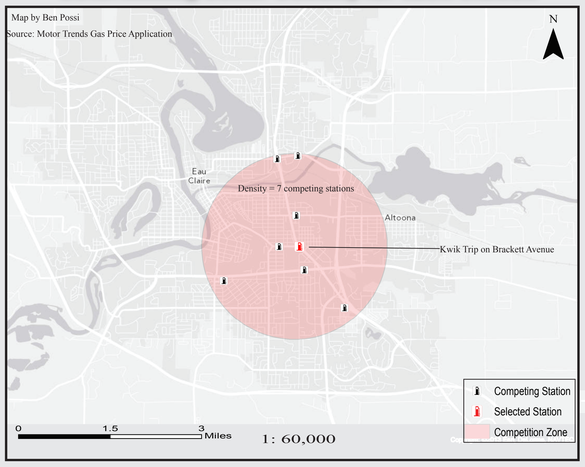
$$HHI = \sum_{i=1}^{N} S_i^2 \rightarrow (S_1)^2 + (S_2)^2 + (S_3)^2 + \ldots$$

where S is equal to the percent of market share

Interpreting the HHI

HHI	Market Condition
HHI<0.01	Highly Competitive/Unconcentrated
0.01<HHI<0.15	Competitive/Unconcentrated
0.15<HHI<0.25	Somewhat Competitive/Moderately Concentrated
0.25<HHI	Potentially Noncompetitive/Highly Concentrated

Determining Seller Density for Each Station



Determining Seller Density Continued

A radius of 1.5 miles was chosen for the competition zone to be consistent with a previous studies and reports. The chosen distance is based upon the distance drivers typically travel when price searching in the City.

Through an iterative process in a GIS, the seller density was determined for each gas station in each city. Seller density was later used as an explanatory variable in the regression analysis.

Determing Price Dispersion

Price dispersion is the variation in prices across sellers of a certain good. In this study, we explored the standard deviation in price of regular gas for each station over a two week period. In addition, we looked at the market-wide price variance in each City.

Quantitative Results

Regression Analysis Summary Report

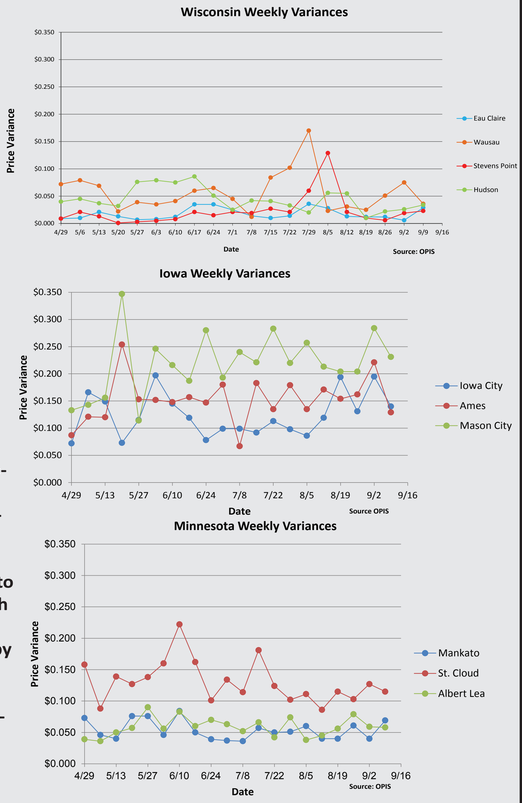
City	R-Square	Std. Error	Constant	Coefficient	Significance.
Eau Claire	0.500	0.005	0.006	0.000	0.246
Wausau	0.618	0.005	0.000	0.002	0.000
Stevens Point	0.438	0.004	0.004	0.001	0.005
Hudson	0.916	0.006	-0.003	0.005	0.000
St. Cloud	0.435	0.031	0.008	0.004	0.000
Mankato	0.644	0.013	0.002	0.006	0.000
Albert Lea	0.546	0.008	-0.005	0.004	0.003
Ames	0.684	0.011	0.100	0.005	0.056
Iowa City	0.840	0.179	-0.006	0.008	0.000

$$Dispersion_i = \beta_0 + \beta_1 Density_i + \epsilon_i$$

Where: $Dispersion_i$ = The standard deviation in the price of the i^{th} gas station over a two week period.

$Density_i$=The number of competing gas stations within a 1.5 mile radius of the i^{th} gas station.

Price Dispersion by State



Average Pricing Information

City	Average Whole Sale Price	Average Retail Price
Eau Claire	2.95	3.76
Wausau	2.95	3.75
Stevens Point	2.95	3.69
Hudson	2.95	3.69
St. Cloud	2.95	3.62
Mankato	2.95	3.68
Albert Lea	2.95	3.68
Mason City	2.95	3.65
Ames	2.91	3.53
Iowa City	2.93	3.61

Source: opis

Summary Statements

- Penalty structure of the Unfair Sales Act provides incentive for local retailers to charge similar prices. However, this cannot fully explain why prices are higher in Eau Claire.

- The lower level of competition translates into greater "market power" for firms. Thus, with lower competition, retailers could charge a markup higher than that which is required by state law.

- If local market is characterized by a few relatively large firms, then firms' pricing decisions are interdependent.