

# VALUATION BY MULTI-LINEAR REGRESSION

This analysis was performed by the least squares method of straight line multi-linear regression. In this approach the valuation process has been controlled by the valuator (human expert who is experienced in the valuation of real property in the subject's market area) from start to finish. The sales used in the analysis were chosen by the valuator and are listed below along with the values that the model has predicted for them.

Value by Multi-linear Regression:	<u>\$113,388</u>
R <sup>2</sup> & Adjusted R <sup>2</sup> :	<u>75.3% / 71.9%</u>
Average Absolute Errors & CoV:	<u>6.1% / 7.9%</u>
Standard Error of Regression:	<u>\$11,102</u>
Over-all Confidence Rating:	<u>Good</u>

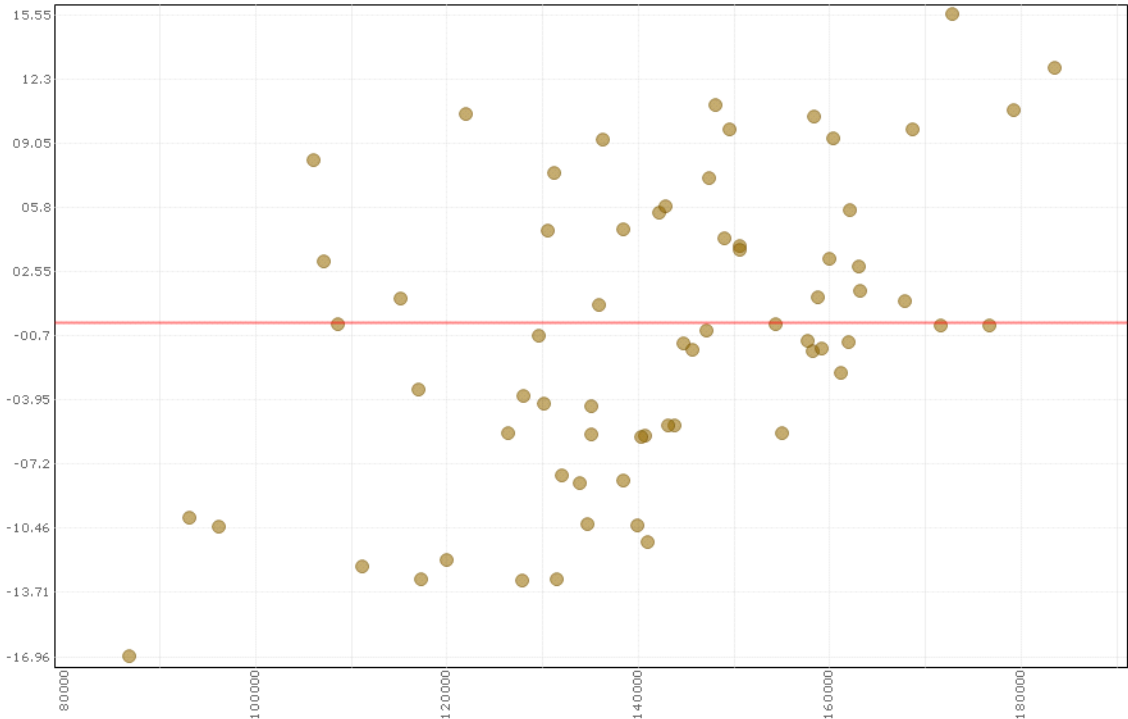
Total Indicated Value by the Direct Comparison Approach: \$113,388

**Final Opinion of Value (Rounded)** **\$113,000**

The effective date of this value is 2/22/2013.

## Qualification of the Market Model

Residual Scatter Plot



## Explanation of the Confidence Rating

The confidence rating is based on several factors that are considered individually below. The closer to 100% the better the confidence rating is.

Excellent	Good	Acceptable	Rating
	X		1) Number of Observations
	X		2) Quality & Accuracy of Data Sample
	X		3) Model's Prediction Accuracy (CoV & Avg. Error)
	X		4) Subject Property's Fit to the Data Sample
	X		5) Reasonability of Model's Outputs for Characteristics
	X		6) Weights Applied by Model
	X		7) R <sup>2</sup> , Adjusted R <sup>2</sup> , and Standard Error
	X		8) P-Values
	X		9) Trend Analysis of Individual Components
	X		The Over-all Confidence Rating

**EXCELLENT (95% to 100%):** This rating means you would expect this model to predict a range from \$110,175 to \$115,825 for the subject property.

**GOOD (90% to 94.9%):** This rating means you would expect this model to predict a range from \$104,525 to \$121,475 for the subject property.

**ACCEPTABLE (85% to 89.9%):** This rating means you would expect this model to predict a range from \$98,875 to \$127,125 for the subject property.

## Model's Output, Coefficients and Statistics

Characteristic	Coefficient	Std.Error	P-Value
Intercept	\$59,229	24516.297	0.019
Square Feet	\$36	11.989	0.004
Age	(\$2,056)	295.919	0.000
Garage	\$14,472	2686.817	0.000
TotalBaths	\$28,788	9039.094	0.002
MCA180_2	(\$11,242)	7621.960	0.146
MCA180_3	(\$14,775)	8150.491	0.075
MCA180_4	(\$21,970)	7161.158	0.003
MCA180_5	(\$32,737)	7240.809	0.000

### Model's Output Applied to Subject Property

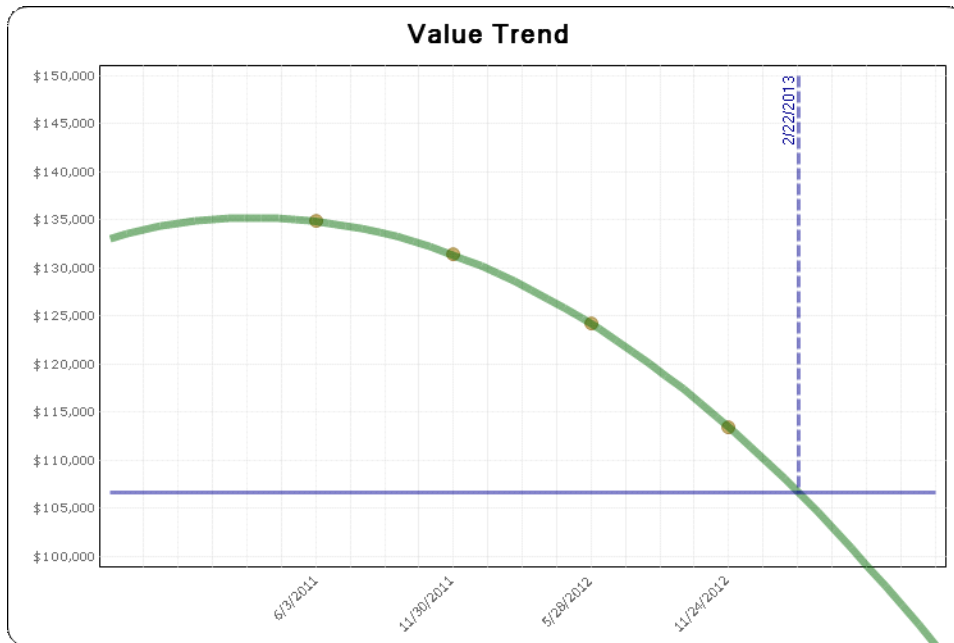
Characteristic	Coefficient	Subjects	Subject Value	Deviation	Weight
Intercept	\$59,229	1.0	\$59,229		24.1%
Square Feet	\$36	1260.0	\$45,605	1.423	20.6%
Age	(\$2,056)	22.0	(\$45,230)	1.890	12.9%
Garage	\$14,472	2.0	\$28,944	0.477	10.8%
TotalBaths	\$28,788	2.0	\$57,576	0.169	23.3%
MCA180_2	(\$11,242)	0.0	\$0	0.644	1.0%
MCA180_3	(\$14,775)	0.0	\$0	0.549	0.5%
MCA180_4	(\$21,970)	0.0	\$0	0.817	3.5%
MCA180_5	(\$32,737)	1.0	(\$32,737)	1.971	3.4%

Total indicated value of the subject property based on ML Regression: \$113,388

## MARKET CONDITIONS ANALYSIS

A market trend analysis was performed by plotting the adjusted value of a property that is typical of the comparable properties used. This adjusted value is much more reliable than market trending based on the unadjusted sales prices or unadjusted sales prices per square foot. The plotted sales prices were derived by regression analysis.

R <sup>2</sup> & Adjusted R <sup>2</sup> :	75.3% / 71.9%
Average Absolute Errors & CoV:	6.1% / 7.9%
Standard Error of Regression:	\$11,102



Trend Line Value =  $14.99k^3 - 1965.75k^2 + 6010.31k + 130605.36$   
 Where  $k = (\text{Number of days since } 6/8/2010) / 180$ .

### Comments on the Market Conditions Analysis

This market has continued to see declining values since the Toyota plant closing two years ago. Several auto related business closed down their local operations after Toyota left.

## Definitions

Adjusted R<sup>2</sup>: is a more conservative measure of R<sup>2</sup>, which considers the ratio of between the number of observations and the number of variables considered.

Average Absolute Errors: is a measure of dispersion. It is the average absolute residual as a percentage of the sale price for all of the observations (sales).

Coefficient of Determination (R<sup>2</sup>): The coefficient of determination is the percentage of deviation that can be explained by the relationship between the sale prices (dependent variable) and the property characteristics considered (independent variables).

Coefficient of Variation (CoV): is a measurement of dispersion. It is the ratio of the standard deviation to the mean of the residuals.

Deviation: is a measure of a property characteristic's fit to that of the data used in the analysis. It is presented in the number of standard deviations it is from the average of the sample data.

P-Value: is a statistical measure of the likelihood that there is a linear relationship between the property characteristic and sale prices. Its value can range from "0" to "1", with "0" indicating a relationship and "1" indicating there is no relationship.

Standard Error of the Regression: is the standard deviation of the dispersion of actual variable values around regression line.

Standard Error of the Variable: is the standard deviation of a regression coefficient estimate. Generally, the smaller the standard error is relative to the variable's coefficient the better.

Weight: is the amount of value that a specific property characteristic represents to the over-all value of properties in the market.

## List of 67 Property Observations used to calculate ML Regression Model

Street Number / Street Name / City	Actual	Prediction	ABS Diff.
3728 Davis Ford Maryville	\$108,518	\$108,662	0.13%
222 Twin Ridges Dr Maryville	\$161,963	\$163,585	1.00%
3327 Mutton Hollow Road Maryville	\$167,842	\$166,076	1.05%
2121 Autumn Oak Maryville	\$158,165	\$160,509	1.48%
1953 MIDDLESETTLEMENTS RD. MARYVILLE	\$160,373	\$145,465	9.30%
4333 Lorena Lane Maryville	\$171,539	\$171,860	0.19%
3327 Mutton Hollow Road Maryville	\$159,892	\$154,834	3.16%
831 Alley Drive Friendsville	\$179,193	\$159,959	10.73%
1258 Seven Oaks Lane Maryville	\$161,172	\$165,345	2.59%
753 Meadow Ridge Rd Walland	\$163,217	\$160,661	1.57%
123 N.Clover Hill Ridge Rd Maryville	\$155,073	\$163,810	5.63%
716 Meadow Ridge Road Walland	\$139,890	\$154,341	10.33%
472 Wilaway Road Maryville	\$133,882	\$144,815	8.17%
342 Gateway Rd Maryville	\$183,453	\$159,915	12.83%
1434 BLOCKHOUSE ROAD MARYVILLE	\$86,815	\$101,537	16.96%
3523 Old Niles Ferry Road Maryville	\$176,660	\$177,037	0.21%
4031 PAYNE HOLLOW ROAD WALLAND	\$126,400	\$133,534	5.64%
4343 Lorena Ln Maryville	\$159,218	\$161,320	1.32%
2815 Willocks Avenue Maryville	\$121,895	\$109,051	10.54%

645 Patterson Rd Walland	\$107,083	\$103,809	3.06%
3007 Best Road MARYVILLE	\$143,806	\$151,387	5.27%
3111 Wilkinson Pike Maryville	\$106,001	\$97,300	8.21%
2841 Montvale Road Maryville	\$140,925	\$156,672	11.17%
3503 Clover Hill Ridge Road Maryville	\$157,671	\$159,162	0.95%
741 MEADOW RIDGE RD WALLAND	\$135,098	\$140,833	4.25%
3059 Best Maryville	\$130,058	\$135,476	4.17%
201 Gadwall Lane Maryville	\$127,845	\$144,568	13.08%
2318 Dublin Drive Maryville	\$144,658	\$146,197	1.06%
1358 Warrior Path Maryville	\$158,785	\$156,788	1.26%
4832 Beckford Dr Maryville	\$147,427	\$136,728	7.26%
109 Muscovy Way Maryville	\$163,001	\$158,460	2.79%
202 LAVISTA DRIVE MARYVILLE	\$172,823	\$145,944	15.55%
725 MEADOW RIDGE RD WALLAND	\$150,632	\$144,843	3.84%
4342 Lorena Lane Maryville	\$140,726	\$148,861	5.78%
2701 Druid Hill Dr. Maryville	\$154,272	\$154,422	0.10%
4523 Mint Rd. Maryville	\$142,185	\$134,318	5.53%
2849 Best Road Maryville	\$158,325	\$141,832	10.42%
1509 Diamondhead Way Friendsville	\$138,406	\$149,527	8.04%
2631 DRUID HILL DRIVE MARYVILLE	\$148,064	\$131,770	11.00%
3835 MISER STATION ROAD LOUISVILLE	\$131,979	\$142,281	7.81%
1430 Blockhouse Road Maryville	\$130,488	\$124,502	4.59%
6141 Bingham Lane Maryville	\$143,100	\$150,562	5.21%
2129 AUTUMN OAK CIRCLE MARYVILLE	\$147,112	\$147,725	0.42%
241 Merganser Lane Maryville	\$162,110	\$152,937	5.66%
1929 Middlesettlements Rd. Maryville	\$145,675	\$147,696	1.39%
327 Teal Drive Maryville	\$131,424	\$148,550	13.03%
3105 HEATHER GLEN DR MARYVILLE	\$168,618	\$152,235	9.72%
118 Dave Lane Maryville	\$111,165	\$124,900	12.36%
3847 Big Springs Ridge Friendsville	\$134,645	\$148,448	10.25%
2106 AUTUMN OAK CIRCLE MARYVILLE	\$140,230	\$148,448	5.86%
155 Tannery Rd Walland	\$115,153	\$113,775	1.20%
5553 INDIAN WARPETH MARYVILLE	\$150,628	\$145,123	3.65%
4422 Bart giffin MARYVILLE	\$135,132	\$142,850	5.71%
243 Shenendoah Dr. Friendsville	\$138,365	\$131,891	4.68%
116 Jerry Cardin Lane Friendsville	\$93,033	\$102,251	9.91%
502 Lejeune Dr Maryville	\$136,304	\$123,702	9.25%
3026 Pennington Circle Maryville	\$129,520	\$130,457	0.72%
227 Lavista Dr Maryville	\$117,332	\$132,585	13.00%
112 Muscovy Way Maryville	\$148,960	\$142,633	4.25%
3417 MCGEE RD MARYVILLE	\$119,882	\$134,373	12.09%
2514 Cinema Dr Maryville	\$117,016	\$121,003	3.41%
2527 Cinema Drive Maryville	\$131,227	\$121,293	7.57%
1304 SEVEN OAKS LANE MARYVILLE	\$149,480	\$134,902	9.75%
4224 INGRID DR. MARYVILLE	\$135,925	\$134,757	0.86%
344 Headrickview Drive Maryville	\$142,812	\$134,410	5.88%
2325 CAYUGAS LN Maryville	\$96,158	\$106,132	10.37%
625 N. Union Grove Rd Friendsville	\$128,000	\$132,788	3.74%