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San Diego, CA
appraisalinstitute.org/aiconnect
Expert Testimony:
Regression Analysis
and Other Systematic
Methodologies

by Peter F. Calisera, PhD, John A. Heiker, JD, and
Joseph W. Puglisi, PhD

9 May 8, 2008, the U.S. Court of Appeals for the Seventh Circuit decided
the eminent domain case of Guardian Pipelines, LLC, v. WIES, a/k/a
Land, et al.1 In 2001 Guardian began construction of a 144-mile underground
central natural gas transmission pipeline, uninitiated by the Federal Energy Regulatory
Commission, from Joliet, Illinois, to Janesville, Wisconsin. The IBE’s Illinois
section traversed hundreds of acres in four southern counties. Guardian negotiated
for much of the needed right-of-way, a $50 million permanent easement and
adjacent temporary construction easements. Approximately eighty landowners
rejected the offers, however, and Guardian initiated condemnation action under
the Natural Gas Act in U.S. District Court in Chicago. In 2002 the federal trial
court ruled an order of condemnation, allowing pipeline construction to go forward
while leaving for later determination the just compensation that Guardian
would have to pay for the condemnors’ interests.

As allowed by the Federal Rules of Civil Procedure, the court subsequently appointed a commission, consisting of three experienced Illinois lawyers, to
draft an expert report; recommend compensation for each landowner; and
hearing that landowners, it was concluded in accordance with the Federal Rules of Evidence (FRE) for the court’s instructions, over the course of seven–six days between
June 2005 and July 2005. Both Guardian and the landowners presented extensive
expert testimony concerning the pipelines’ economic impact on market values of the contested tracts. The evidentiary record ultimately consisted of
12,000 pages of testimony and hundreds of exhibits.

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1. 528 F.3d 204 (7th Cir. 2008).

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Our Journey Begins

• 86 years in the making
  – Caspar G Haas
    • 1922
    • “Sales Prices as a Basis for Estimating Farmland Value”
The University of Minnesota
Agricultural Experiment Station

Sale Prices as a Basis for Farm Land Appraisal

By G. C. Haas
Professor of Agricultural Economics

UNIVERSITY FARM, ST. PAUL
\[
\frac{r_{15.34} - r_{12.34} \cdot r_{25.34}}{\sqrt{1 - r_{12.34}^2} \cdot \sqrt{1 - r_{25.34}^2}}
\]

From the coefficients of correlation, we can determine the coefficients of relationship expressed in absolute units, known as coefficients of regression: for example, \( b_{15.234} \) (\( \sigma \) representing standard deviation).

\[
b_{15.234} = r_{15.234} \frac{\sigma_{1.5234}}{\sigma_{5.1234}}
\]

The forecasting formula is readily determined when once the regression coefficients are known. Following is the generalized formula:

\[
X_1 = a + b_{12.345} \cdot X_2 + b_{13.245} \cdot X_3 + b_{14.235} \cdot X_4 + b_{15.234} \cdot X_5
\]

\((X_1 \text{ represents value per acre in this case, and } X_2, X_3, X_4, X_5, \text{ the other factors considered.})\)

The probable error involved in predicting \( X_1 \) from the other factors is expressed in the formula:

\[
\sigma_{1.2345} = \sigma_1 \sqrt{(1 - r_{15}^2) \cdot \sqrt{(1 - r_{14.5}^2) \cdot \sqrt{(1 - r_{13.45}^2) \cdot \sqrt{(1 - r_{12.345}^2)}}}}
\]

Provable error = \( \sigma_{1.2345} \times 0.674489 \)

These equations and explanations are presented so that the reader will be familiar with the notations when they are used later.
APPLICATIONS

The method of appraisal here outlined can be of great practical value for many purposes, chief of which are the following: (1) as a basis for mortgage loans; (2) as a basis for assessment and taxation; (3) as a basis for buying and selling; (4) for inventorying a farm business or an estate; (5) as a basis for estimating rent on different farms and different classes of land where rents are needed for cost accounting; (6) as a basis for determining benefits and damages from drainage ditches, roads, and other local improvements; (7) as a basis of settlement of court disputes involving questions of land values; (8) for making valuation of farm land used in railway right-of-ways and the like.

The Federal Land Banks, the joint stock land banks, other banks, mortgage companies, insurance companies, and others who loan money on farm land are in need of a scientific measure of farm land value such as is here presented. Land credit can not be put on an equitable basis unless farm values are appraised accurately. The lack of this value information is the principal reason for our present “conservative” policy, for with underestimated valuations and with his security thus understated, the farmer is not able to get all the credit he desires. This is not only of interest to farmers, but also to the investors. The investor wants to be certain that the values placed on the mortgaged land are their true values. If the investing public was convinced that such valuations represented true market values, it would no doubt accept a lower net yield on the investment in lieu of the decreased risk due to accurate appraisal. Accurate appraisal would thus bring about lower interest rates to farmers on long-time credit.
Starting at the beginning....

• Mass Appraisal and Single Property Appraisal
Appraisal History

✓ Mass vs Single Property Appraisal
✓ Similarities
  ✓ Both Applied Economic Analysis
  ✓ USPAP
  ✓ Overseeing Professional Bodies (AI vs IAAO)
✓ Differences
  ✓ Scale
  ✓ Quality Control
Appraisal History (2)

• Development of AVMs
  – Mass Appraisal Applications since 1970’s
  – Large Urban Assessment Offices
  – University Main Frames

• Fee Appraisal Side
  – Rejected Assessor’s Database Initially
  – Not Practical
  – Used Other Methods
    • Matched Pair Analysis
    • Manual Adjustments
    • Cost Approach
    • DCF for Income Approach
Appraisal History (3)

• 1990 to Present
  – Computer PC Revolution
  – Internet
  – USPAP
  – Software

• Private Sector AVM Development
Appraisal History (4)

• Private Sector AVMs
  – Mostly Residential
  – Mostly Regression Based
  – Some Modeled after Assessor
  – Mostly Assessor Data
  – Large Corporate Development
  – Fixed or Adjustable
  – Internet Applications
Appraisal History (cont)

• Current State
  – Residential in Flux
  – Role of Statistical Driven versus Appraisal Driven Models
  – IAAO and AI
  – Individual Appraiser
Everyone’s Goal:

Whole Market Analysis
The Drive Towards Better Analysis

• Relating the 1004 MC to this process
• How we will all need to know more about data, our markets, trends, etc in the (very near) future
• Hopefully, when we pull the data, we will know the relevance
STEP 1: SELECT ALL MARKET DATA
STEP 2: DEFINE MARKET AREA
STEP 3: SELECT AND MODEL ALL PROPERTIES IN DEFINED MARKET AREA
STEP 4: SELECT MOST COMPARABLE DATA FOR FINAL ADJUSTMENTS
Whole Market Analysis

• Previously
  – Limited data
  – Powerful valuation methods to deal with limited data
  – Valuation theories developed
  – Some computer applications and modeling developed over time
• Now
  • Too much data (not really)
  • Enhanced methodologies
    • Statistical modeling
    • Software (Excel, SPSS, etc)
  • Modify valuation theories
    • Based on current foundation
    • Not as radical as change in valuation methods
Appraisers build an actual model that predicts sales prices based on the sales considered in the analysis......they are able to determine how accurate the valuation conclusions are for the assembled sales.
Figuring Out the Rules:

• Data and Central Tendency

• The Normal Distribution

• Measuring the Spread
Appraiser determines the contributory value of each significant component of value, such as gross living area, bathrooms, garages etc.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Most Probable Value</th>
<th>Probable Value Range</th>
<th>Significance of Variable</th>
<th>Include in Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Neighborhood Value</td>
<td>$62,424.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLA</td>
<td>$43.08</td>
<td>$38.61 to $47.56</td>
<td>28.50 %</td>
<td>✓</td>
</tr>
<tr>
<td>Total Baths</td>
<td>$3,007.39</td>
<td>$1,454.42 to $4,560.36</td>
<td>05.33 %</td>
<td>✓</td>
</tr>
<tr>
<td>Site Area SF</td>
<td>$2.73</td>
<td>$2.34 to $3.12</td>
<td>11.39 %</td>
<td>✓</td>
</tr>
<tr>
<td>Garage Spaces</td>
<td>$19,214.8</td>
<td>$13,150.52 to $25,279.09</td>
<td>18.31 %</td>
<td>✓</td>
</tr>
<tr>
<td>Carport</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basement Area</td>
<td>$46.86</td>
<td>$41.87 to $51.85</td>
<td>18.32 %</td>
<td>✓</td>
</tr>
<tr>
<td>Basement Finished</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year Built</td>
<td>-$1,143.66</td>
<td>-$1,360.44 to -$926.88</td>
<td>13.21 %</td>
<td>✓</td>
</tr>
<tr>
<td>Fireplaces</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spa</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale Date (Monthly)</td>
<td>$346.57</td>
<td>$192.68 to $500.46</td>
<td>03.26 %</td>
<td>✓</td>
</tr>
</tbody>
</table>
Review Example

- Five houses on a hill by the beach

House Prices:

- $2,000,000
- $500,000
- $300,000
- $100,000
- $100,000

$2,000 K
$500 K
$300 K
$100 K
$100 K
Regression Analysis

• Regression analysis is used to:
  – Predict the value of a dependent variable based on the value of at least one independent variable
  – Explain the impact of changes in an independent variable on the dependent variables
Regression Tied to Appraisal

- Square Footage and Sales Price
  - The greater the square footage-the greater the sales price (hedonic; hedonism)
  - One “causes” the other
  - We “get” this because we are appraisers
Simple Regression includes one Dependent Variable (sales price) and *only one* Independent Variable - such as Square Footage.

Using this model, a 1,000 sf home would be valued at $75,000.
Simple Regression using only size as the independent variable will predict sales prices, however, it will treat all homes with the same size equally.
What Regression Requires

• Skills in Statistical Interpretation
  – Mean
  – Median
  – Standard Error
  – Variance
  – Significance Level
  – Confidence Intervals
Components of value

• Looking at a SFR
  – What are the components that contribute to value?
Components of Value
Regression Components

Dependent Variable:
- Sales Price

Independent Variables:
- Size
- Age
- Location
- Condition
- Lot size
- Construction
- Quality
- Amenities
Regression Models

Another way to look at regression is to think of it as a complex paired sales analysis.

Just with the paired sales analysis, regression is comparing sold properties to determine the differences in characteristics and how much was paid.
What is a Model, Anyway?

<table>
<thead>
<tr>
<th>Valuation Factors (i.e., Coefficients)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross living area</td>
<td>$105 per square foot</td>
</tr>
<tr>
<td>Number of bathrooms</td>
<td>$3,500 per bathroom</td>
</tr>
<tr>
<td>Garage parking</td>
<td>$4,000 per car space</td>
</tr>
<tr>
<td>Basement area</td>
<td>$50 per square foot</td>
</tr>
<tr>
<td>Finished basement</td>
<td>$20 per square foot</td>
</tr>
<tr>
<td>Ranch style</td>
<td>$25,000, if ranch</td>
</tr>
<tr>
<td>Air-conditioning</td>
<td>$3,500, if yes</td>
</tr>
<tr>
<td>Number of fireplaces</td>
<td>$20,000 per FP</td>
</tr>
</tbody>
</table>
Estimating Values

• Property values can be estimated based on a regression model based on a sample of previously sold properties.
• An appraiser can predict a value for the dependent variable (sale price) based on the known value of the causal (independent) variables.
• Mass appraisal/Ad valorem history.
More

• Regression models produce average, or typical values, consistent with the definition of market value.

• There is a great deal of similarity between regression and traditional appraisal; when appraisers use a weighted average to arrive at a final value estimate-they are effectively applying the assumption of regression to the mean!
The Benefits of Regression

• Regression can be used to determine total property values; or more critically, estimate the individual components of value, e.g:
  – Value of a bathroom
  – Value of a garage
  – Value of square footage
Regression is essentially a variation of the sales comparison approach to value

– Similar to matched pair analysis
– Results are estimates of the average opinion of the market
– Both techniques should produce the same outcomes
A thought:

• Think of regression as “matched pairs on steroids”
Where Regression is Similar

• Judgment required in both
• Regression requires appraiser’s knowledge to interpret
How They Differ

• Traditional Appraisal
  – Point estimate of value (often central tendency)
  – Generally no range around the point estimate

• Regression
  – Point estimate of value
  – AND
  – Objectively determined measure of dispersion around the point estimate
    • Standard Deviation
    • Standard Error
More Differences

• Regression relies on secondary data (data directly drawn from the market, vs. data drawn exclusively from the appraiser)
• The appraiser still must interpret, however
In February 2004, a group of industry thought leaders representing practitioners, academics, and vendors met at the KW-401 Conference to discuss the challenges facing the valuation profession and to investigate proposed solutions to ensure a successful course of action for the future of the profession. Several participants felt that no compelling factor would ensure that advanced tools would be introduced to the market without the involvement of key stakeholders and the emergence of champions to push the process further.

In 2006, several key participants from the KW-401 conference first proposed and identified an analytics engine that empowered an appraiser to determine an independent valuation conclusion, rather than forcing the appraiser to accept the valuation of a vendor or AVM process. This engine—an interactive valuation model (IVM)—would be an entirely new manner of addressing the use of data and analytic and computing power by an appraiser. The key characteristics of an interactive valuation solution require that an experienced appraiser be in control of the data, analysis, and conclusions.

The work of these two groups and the key stakeholders who recognized the need and the opportunity would form the basis of an effort to build an entirely new software application to meet the needs of a data-rich environment.
In 2006, several key participants from the KW401 conference first proposed and identified an analytics engine that empowered an appraiser to determine an independent valuation conclusion, rather than forcing the appraiser to accept the valuation of a vendor or AVM process. This engine—an interactive valuation model (IVM)—would be an entirely new manner of addressing the use of data and analytic and computing power by an appraiser. The key characteristics of an interactive valuation solution require that an experienced appraiser be in control of the data, analysis, and conclusions.
Moving from Valuation Infrastructure of the Past
All of Us Have a Shared and Inseparable Fate

• Really a vested interest in the health of the appraisal profession
  – How do you solve the problems of inferior valuation alternatives such as BPOs or inspection enhanced AVMs?
    • Not by legislation alone
    • Not by regulation alone
    • You need a market alternative-

A market-based solution
Gord Nixon, CEO RBC

• “Developing new products to find better and less expensive ways to service your customer—that is innovation”
The Future Is Not About.....

- Faster form filling
- Shorter forms
- AVM hybrids
- Credible Appraisals
- Transparent Appraisals
- Consistent Appraisals
- Redefining what the appraisal process SHOULD be
The Future

- Is about **interactivity**

- The interaction between data, analytics and the appraiser/analyst

- It is about the re-invention of appraisal

- (or how about the **re-imagining** of appraisal?)
What are the dynamics of this process?

• The solution includes
  – Local appraiser
  – Enabled with data
  – Empowered with analytic tool sets
  – Supportable valuation, delivered quickly
Lenders Face New Choices

• Lenders and servicers have choices:
• An AVM *derivative*
  – *Is your appraisal really an AVM?*
• **Authentic** Valuation performed by an experienced appraiser
• What we need to offer is the next generation of valuation-that meets all Interagency guidelines and does it the right way
Pseudo Valuation

• It’s a jungle out there
  – There are a lot of products in the market that look remarkably like appraisals
  – Interagency Guidelines and the explosion of “product”
<table>
<thead>
<tr>
<th>Feature</th>
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<td><strong>Global Considerations</strong></td>
<td>Yes</td>
<td>Yes</td>
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<td>Is the report an appraisal?</td>
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<td>Is the report process USPAP compliant?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
<td>No</td>
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<tr>
<td>Is the report performed by an appraiser?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
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<tr>
<td>Does the appraiser actually use a tool to analyze and interact with the data to provide an outcome?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Is the appraiser/user trained in high-level analysis?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<td>Is the value result comparable in terms of accuracy to a 1004?</td>
<td>Yes</td>
<td>No</td>
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<td>Is the source of the analysis an appraiser?</td>
<td>Yes</td>
<td>No</td>
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<td>If the report includes valuation models—are they built and controlled</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Are the models and the analysis transparent and visible to the</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>analyzing the Data</td>
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<tr>
<td>Ability to define subject Neighborhood</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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</table>
Solution: Our practice needs to include interactive valuation models for the appraiser to define the appropriate market, be able to review large datasets, remove the outliers, and run regression tools. This process, in a transparent manner, as opposed to an AVM black box, would demonstrate to the lender all data examined as well as those sales not considered. An examination of historical sales going back to at least 24 months would allow for trending and a more thorough reporting of market conditions. The weaknesses in this process would be lack of available data in some markets to obtain a credible result. But that holds true today with our highly manual processes. The clear advantages are that lenders would not need to order multiple products in an effort to collect data. By including the entire data set within the appraisal file this transparency allows the lender to truly review not only the final report but the logic behind the exclusion of some data.
Predictions

- Lenders will want more analysis
- Regression will become the new standard in analysis
- We will have more data than ever before
- We will need tools to analyze this data

- Tools will require training
- Appraisers need to understand what will be required
- Appraisers will be called upon to understand what tools are appropriate
Using Regression-Supported Appraisals

By Adam Johnston
Genworth Chief Appraiser

The way the residential appraisal practice (particularly as it pertains to appraisal for mortgage lending purposes) is sometimes described would indicate that the appraisal practice discourages innovation and vigorously emphasizes the art of appraisal over the science of appraisal.

While some of these characterizations may be inaccurate and misapplied, they may also contain elements of truth. I’ve witnessed residential appraisers who are so devoted to common industry forms that they seem practically incapable of conducting analysis and reporting outside the confines of a prescribed form. With this background in mind, I would like to introduce regression-supported appraisals.

Regression-Supported Appraisals

A regression-supported appraisal can generally be described as an appraisal that incorporates the use of a regression analysis. When used appropriately by a competent appraiser, a multiple linear regression analysis can be a powerful tool in demonstrating support for opinions and conclusions.

Depending on the application and requirements/regulations, a regression-supported appraisal may be done with an interior inspection, as a drive-by only or solely from the desktop. Alan Hummel of Forstie Appraisals describes the use of regression in residential appraisal as “a statistical model that considers all of the information within the neighborhood and not just three sales that a particular person decides are the most comparable and applicable to the subject property.”

The recent emergence of regression-supported appraisal reports, commonly powered by AppraisalWorld’s CVR software, has resulted in a surge of adoption by appraisers and residential mortgage lenders alike. AppraisalWorld requires appraisers to complete online regression courses, pass an exam and submit numerous regression-supported appraisals for constructive critique by qualified trainers before using the model.

Industry veteran and author, Mark Linne of AppraisalWorld says, “Though historically regression analysts have been limited to the assessment side of the profession, products are being developed that leverage data in a way that provides more insight into market value than ever before. Ideally, a knowledgeable and experienced local appraiser empowered with analytic tools that help to extract information from data will be the model for the appraiser of the future. With regression-based valuation tools, lenders will be able to understand and measure risk far more effectively than ever before.”

The Challenges

One of the biggest challenges of the CVR and other regression-supported appraisals is getting buy-in from appraisers. Both Linne and Hummel agree that once trained, an appraiser can use the
technology effectively. There has certainly been an increased awareness of the CVR and other regression-supported appraisals from organizations like appraisal management companies. This awareness appears to be contributing to an increased number of appraisers receiving specific training in regression analysis. On the demand side of the equation, institutional adoption, particularly in the home equity, QA and default space appears to be growing. In fact, the regression-supported desktop appraisal may present a favorable alternative to the use of BPOs (broker price opinions) and other non-appraiser valuations in certain applications.

One thing that clearly appears: the residential appraisal industry may continue to move forward in adopting and leveraging new tools and resources to analyze, support and report data/conclusions in new and meaningful ways.
The Emergence of *Best in Class* Solutions

- Interactive Valuation Products
  - Interactive
  - Data-rich
  - Statistically-supported Appraisals
  - Superior to existing product offerings by non-appraisers
  - Cost competitive
What Does Interactivity Look Like?

- Starts with integrated data
- Defined by the appraiser
- Controlled by appraiser
- Powerful tool set
- Regression analysis
- The final valuation is driven and accepted by the appraiser
Distinguishing Characteristics

- The appraiser attains **mastery training** in statistics and regression
- **Experienced appraisers** at the local level
- **Neighborhood-level analysis** driven by a local expert
- **Robust data** delivered to the appraiser’s desktop
- The final valuation is a reconciliation of the **regression, direct sales comparison and listing data**
Defining the neighborhood - identifying the influences that are most critical in influencing value - drawing boundaries and considering external influences on the subject property.
In the neighborhood analysis, all of the 1004 MC characteristics plus a spatial display of data
Information on sales, listings, absorption and the general state of the market at the neighborhood level is presented...........
The heart of the application is the regression analysis, which begins with a listing of all of the sales and all of their relevant characteristics. The application scores each sale on a scale of 1-1000, ranking each sale that is most comparable to the subject property, comparing location, size, age, # of baths and so on. Once the information is reviewed by the appraiser-regression analysis is run ...
Appraisers are trained to understand and use regression analysis
Appraisers build an actual model that predicts sales prices based on the sales considered in the analysis......they are able to determine how accurate the valuation conclusions are for the assembled sales.
They can examine the model output, the amount of data and other relevant factors and comment on the valuation conclusions.....
Appraiser determines the contributory value of each significant component of value, such as gross living area, bathrooms, garages etc.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Most Probable Value</th>
<th>Probable Value Range</th>
<th>Significance of Variable</th>
<th>Include in Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Neighborhood Value</td>
<td>$62,424.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLA</td>
<td>$43.08</td>
<td>$38.61 to $47.56</td>
<td>28.50 %</td>
<td>✓</td>
</tr>
<tr>
<td>Total Baths</td>
<td>$3,007.39</td>
<td>$1,454.42 to $4,560.36</td>
<td>05.33 %</td>
<td>✓</td>
</tr>
<tr>
<td>Site Area SF</td>
<td>$2.73</td>
<td>$2.34 to $3.12</td>
<td>11.39 %</td>
<td>✓</td>
</tr>
<tr>
<td>Garage Spaces</td>
<td>$19,214.8</td>
<td>$13,150.52 to $25,279.09</td>
<td>18.31 %</td>
<td>✓</td>
</tr>
<tr>
<td>Carport</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basement Area</td>
<td>$46.86</td>
<td>$41.87 to $51.85</td>
<td>18.32 %</td>
<td>✓</td>
</tr>
<tr>
<td>Basement Finished</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year Built</td>
<td>-$1,143.66</td>
<td>-$1,360.44 to -$926.88</td>
<td>13.21 %</td>
<td>✓</td>
</tr>
<tr>
<td>Fireplaces</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spa</td>
<td>Insufficient Data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale Date (Monthly)</td>
<td>$346.57</td>
<td>$192.68 to $500.46</td>
<td>03.26 %</td>
<td>✓</td>
</tr>
</tbody>
</table>
Sales are ranked and displayed; adjustments drawn from the regression.
In a similar fashion, listings drawn from the neighborhood are displayed, adjusted and utilized to gain a sense of the current market in real time.
Appraiser reconciles all value indications and concludes a value
The final Collateral Valuation Report generated by the application provides a supportable valuation estimate for the client, validated and derived by the appraiser, empowered by the data, the analysis and the powerful regression tools. The final result can be relied upon by the client for lending decisioning.
Rebuilding Confidence

• When you combine
  – Local Appraisal Expertise
  – Data and Interactive Analytic Tools

• You get
  • Transparent
  • Supportable
  • Credible
  • Accurate
At the end of the day....... 

• Remaining relevant
• Providing value to clients/stakeholders/the public
• Leveraging market knowledge
• Providing innovative solutions
• Better appraisals
• That is how our profession **survives** and **prospers**
• This is a battle for the **future** of valuation