



**Union of Panamerican Valuers Association
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**Innovation in Residential Valuation Tools:
Integrating Data and Analytics**

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Abstract:

Why have residential appraisers failed to implement and adapt to the profusion of technology and data that are presently available to provide a more sophisticated understanding of the dynamics of the residential marketplace? There are several reasons: appraiser's lack of necessary skill sets, software and tool-sets, clients' reluctance to compensate appropriately, no one connecting the dots, the isolated nature work-from-home aspects of the business, etc. Another reason often cited by veterans in the industry is the virtually universal use of prescribed forms that drive the mortgage origination side of the industry. The residential appraisal marketplace has been characterized by many as the manifestation of "form-filling."

Many appraisers have in fact been analyzing markets, but the results of those analyses have not been communicated to clients because the nature of the current form technology limits the information provided to the client. The client sees only the results of the analysis as reported in the form, not the data, analysis, and support that serves as the basis of the analysis. Appraisers will not be able to provide transparency without a change in the form itself.

How then does this dynamic change? How does innovation enter a market? Where does it come from, and which stakeholders would be the most successful in introducing a product into mainstream use? The answer is no more complex for the residential appraisal marketplace than any other mainstream market. The status quo is sufficient for most stakeholders, who often

In 2006, a group of industry stakeholders, including subject matter experts, appraisers, academics, statisticians, and software developers, came together to create a prototype that would serve to move the appraiser away from entering data into a form and instead concentrate on analyzing the data that was pulled into the report and aggregated from a variety of public and private data sources.

The goals included transparency, whole-market analysis, and the integration of sophisticated regression analysis at the core of the application. Another goal was to meld an appraiser's experience, judgment, and local knowledge with the ability to quickly parse and understand data. The most important core goal of the product, however, was that the appraiser be in control at all times of the data, the analysis, and the outcome. Since the product was intended to provide a USPAP-compliant process, the development group felt that it was critical that appraisers felt confident in the valuation process and the product produced. Some examples of the software that resulted from this analytics project will be discussed in this paper.

Overview:

Even before there was a sub-prime crisis, even before there was a meltdown of Wall Street, Fannie Mae, Freddie Mac, and much of the nation's financial infrastructure-there have been systemic and undeniable issues with the manner in which property values were analyzed, packaged, managed and distributed to the various stakeholders in the lending and underwriting process that rely on collateral values.

Much of the problem related to the fact that while the exterior façade of the valuation industry had the trappings of technological currency, the core process by which values were derived has essentially been unchanged for at least three decades.

What has changed in the last five years is access to unprecedented amounts of data about real estate. Yet for all of the data now available to the profession-what has been lacking are the tools to effectively mine and refine this data, and ultimately, providing more credible valuations of the underlying collateral that drive mortgage transactions and other financial services. For it is precisely the valuation of collateral that has been lacking in the marketplace during the current financial debacle. Lenders, government officials and other have been ill-served with the data available.

Tools are being developed that effectively mine and refine real estate and local level econometric data in a manner that can offer breath-taking advances to lenders, and underwriters and those who rely on valuation services to gauge the underlying value of collateral.

Coupled with the availability of advanced tool sets is the importance of MBA's MISMO (Mortgage Industry Standards Maintenance Organization) initiative and the recent adoption by Fannie Mae of the MISMO residential data standard for 2011.

The underlying questions remains: if more is known about the valuation of residential collateral-could better decisions come about to benefit all parties and stakeholders in the marketplace?

Importance to the Valuation Profession:

The consideration and evaluation of the importance of public data, private data and the new drive towards data standards, are critical factors that will impact the valuation and collateral valuation process. New analytics are being developed that incorporate techniques first developed on the assessment side of the valuation profession. Assessment professionals and fee appraisers have a vested

interest in understanding how mass appraisal techniques and methodologies being developed in the private sector may have an impact on the manner in which ad valorem techniques are developed and applied.

In 2010 the valuation profession faces changes as profound as any in its history. In the wake of the collapse of the subprime lending market, it is clear that collateral valuation matters to a healthy market economy. It is just as clear that today market data, standardization of data, tools for data analysis, and the real estate industry's search for quality are at a tipping point that can lead the valuation community to new opportunities.

In recent years, the only constant for virtually all business and organizational structures has been change, and the appraisal profession, which has historically resisted the ongoing changes within the financial services and information services sectors of the economy, is poised to catch up.

What are the lessons to be learned from the events of 2007-2009, and how will the valuation profession move forward to regain the public trust and provide its clients with new products and services that enhance the accuracy of collateral valuation? In recent years, lenders have been relying on esoteric collateral valuation products, principally broker price opinions (BPOs) that financial services clients have increasingly chosen over traditional appraisals. The search for methods of satisfying current client needs will bring all of the disparate data, technology, and methods together in a paradigm shift, leading finally to a redefinition and evolution of the profession, a change many have called Valuation 2.0.¹

Over the last decade, a trend towards the use of data analysis, including statistical modeling and techniques such as regression analysis, has increasingly found its way into segments of society that would have been unexpected a decade ago. Indeed, the growth and success of statistical modeling in a broad range of situations to improve performance and predictive capabilities has increasingly been mainstreamed. Several books, including *Super Crunchers* (Ian Ayres) and *Moneyball* (Michael Lewis) detail the manner in which every segment of society can benefit from a focus on statistical analysis of data.

Super Crunchers demonstrates that data-driven decision-making is not just revolutionizing business or baseball; rather, it is changing the manner in which health care reimbursements, education policy and even tax regulations are

¹ Mark R. Linné, "Valuation 2.0," *Valuation* (First Quarter 2008): 17-20; and Mark R. Linné, "Thriving in the Valuation 2.0 World," *Valuation* (Third Quarter 2008): 14-18.

crafted. Understanding data and the predictive power that it provides, connects statistical analysis to making better decisions.

In books such as *Moneyball*, the use of statistics in non-traditional situations is explored. The book details the great success of the statistical science of sports—now termed cybersports, which identifies how a scientific and statistical approach to baseball and other sports can improve management's ability to craft a winning formula.

There are numerous examples of how statistical analysis that help to make better-informed business decision, including the success of Nate Silver and others in forecasting baseball and election results, and the data mining Google and Amazon do to seemingly anticipate the book or CD a consumer ought to buy next based on past purchases/searches. These are tangible examples of how this type of analysis can benefit the ability to predict future activities based on a consideration of past performance.

What should appraisers be aware of as the future rushes towards them at breathtaking speed? How can appraisers position themselves? And what can practitioners and valuation futurists teach appraisers with respect to positioning themselves to not only survive, but grow and prosper? These are the questions that this paper will seek to answer.

The Impact of Standards: It's All About Data

Real estate is the last digital frontier—one of the few major components of the economy yet to take advantage of the standardization of data and the technological innovation that has subsumed other sectors of the economy. In his 2005 book *The World Is Flat: A Brief History of the Twenty-First Century*, New York Times columnist Thomas Friedman discusses how the world is being flattened by various drives towards technology and standards. The book analyzes globalization, primarily in the early 21st century. The title is a metaphor for viewing the world as a level playing field in terms of commerce, where all competitors have an equal opportunity. The title also alludes to the perceptual shift required for countries, companies and individuals to remain competitive in a global market where historical and geographical divisions are becoming increasingly irrelevant.

These same two drivers, data standardization and technological innovation, are flattening the real estate world and, by extension, the valuation terrain. Friedman looks at the impact of data and standards in the real estate market and suggests that because of the size of the market, the impact of data and standards in the real estate market could have one of the biggest impacts of any trend in any other

market, including in his comment the fact that the impact could be greater economically than any other event of the last century, “including the internet”.

Perhaps the biggest trend that will impact the valuation profession is the realistic possibility that in the near future appraisers and assessors will have access to more data than they ever believed possible. For the first 75 years of the profession’s history, appraisers and assessors existed in an environment characterized by a dearth of data. In 2010, there is a glut of data from many sources. There are proprietary databases from commercial courses such as FirstAmerican/Core Logic, DataQuick, and LPS on the residential side, and Costar and Loopnet on the commercial side, that represent the monetization of the assessment public record database that now provides information on more than 100 million properties.

The potential change in the valuation profession’s relationship to market data begs several questions:

- How will the profession cope when it has access to most, if not all, of the data within the market?
- Do valuation professionals have the tools, the education, and the methodologies to evaluate this cascade of information?
- What general trends are on the horizon, and what are the trends that are likely to have the greatest impact on the appraisal profession?
- How can appraisers prepare themselves to take advantage of the opportunities that will undoubtedly result from all of these forces?

At the 2007 MBA Multi-Family Asset Administration and Technology Conference, the topic of data standards was considered in a panel presentation aptly titled “The Property Data Revolution.” (Describing the efforts to bring data standards to appraisal and mortgage lending as “revolutionary” is itself avant-garde.) Perhaps the most critical points made by members of the panel include the observations that data standards create order from chaos, that they give understanding to data, and finally that they put information into context. In other words, data standards will eliminate the worry about the “how” of moving data around between different participants in the mortgage transaction. In the near future, appraisers and assessors will be more concerned with the “why” of understanding data.

Standards will ensure that real estate and valuation data flow to all parties within a transaction, eliminating transactional friction and leading to a more efficient and transparent marketplace. It is clear in talking to lenders, vendors,

and industry insiders that data standards will not only change how appraisers present data to their clients but it will in all likelihood change the very manner in how appraisers value properties and perform analysis.

How can appraisers take advantage of the new profusion of data that is available to assist in the valuation of residential and commercial property? What has recently emerged in the market is the concept of Alternative Valuation Products (AVP's) that seek to bring back the concept of blending data and new tools to provide more meaningful analysis. Some of these new tools seek to redress the mistakes of the past when vendors attempted to take AVM technology and "force" the appraiser to utilize the AVM output and agree with its conclusions. The newer AVP products are more interactive in functionality, and have been termed "Interactive Valuation Models" or IVMs. These products give the appraiser/user the ability to interact with the analysis more directly, and gives the appraiser more control over the analysis and the valuation outcome.

Alternative Valuation Products have the potential to provide appraisers with the opportunity to meet a market need that clients have sought to obtain from non-appraisal sources until recently.

The Emergence of Analytic Tools for Real Estate:

Tools have recently been developed that effectively mine and refine real estate and local level econometric data in a manner that can offer breath-taking advances to lenders, and underwriters and those who rely on valuation services to gauge the underlying value of collateral. By having greater granularity in the valuation process, by enhancing the data available to the secondary market, there will be a significant opportunity to bring process enhancement to all stakeholders in the marketplace.

It is logical to assume that the work of a valuation professional, augmented by more robust statistical analysis and techniques, could ultimately result in a more supportable valuation that has the analytical support of sophisticated data analysis. Ultimately, it would seem that integrating the strengths of regression with the inherent skill set of appraisers would yield the best of both techniques.

The concept of applying advanced analytics to residential property information is the critical driver to a better understanding of the market. This concept of advanced analytics basically means collecting and organizing raw data, applying statistical analysis to it, and deriving meaningful outcomes that permit effective decisions to be made regarding adjustments, the underlying adequacy of the data, and supporting valuation in the marketplace. A hands-on approach that delivers practical applications is the only acceptable route toward equipping

appraisers with the skill sets that will be required for more rigorous analysis of data. Taking the theoretical and making it practical will provide a best-practices perspective that can demonstrate the costs and benefits of using advanced techniques effectively.

Discussions with industry experts reveal that the availability of an interactive, appraiser-driven product would open a floodgate of acceptance by appraisers and additionally satisfy lender demands for a more advanced understanding of market dynamics. Valuation professionals will be able to leverage this technology towards other valuation processes, positioning themselves to provide different and diverse services to clients. With recent markets declines in most parts of the country, and many two-tier segments--(foreclosures/short sales vs. arm's-length transactions), ghost foreclosure market, seller concessions, etc, appraisers and their clients recognize that a solid, supportable value has merit and must be the ultimate goal to regain credibility with their clients.

What are the characteristics of a tool set that can serve to enhance an appraiser's capacity to analyze the profusion of data that exists in the market?

- **What should an application do?**
- **What type of functionality should it have?**
- **What are the features that a successful and meaningful application should have?**

Key features of the future environment included:

- **Lenders will require additional analysis from appraisals.**
- **Regression analysis will become the coming standard.**
- **Appraisers will have more data than ever before.**
- **Appraisers will need tools to analyze this data.**
- **New tools will require new training and skills.**
- **Appraisers will have a need to understand what will be required.**

The following residential appraisal tools set represents an advanced tool set that can enhance the abilities of an appraiser to provide relevant data and analysis to a client, and further, to meet the increasingly granular demands of the marketplace of the future.

The development team created the CompCruncher application that produced the Collateral Valuation Report (CVR) Using CompCruncher, an appraiser would be able to deliver a CVR, which is in essence a summary appraisal report, significantly faster than a traditional 1004. The amount of data, analysis, and

transparency in the process would be enhanced, and all relevant stakeholders would be served in the process.

The series of screen shots on the following pages provides a sequential introduction to the functional aspects of the CompCruncher application. Each screen shot has been annotated with the functional elements connected to that screen.

How accurate is CompCruncher and the Collateral Valuation Report (CVR) that it produces? At its core CompCruncher is as accurate as the appraiser driving the application. In this respect the CVR is similar to traditional appraisal in that the accuracy of both appraisal types is in some part a function of how accurately the appraiser performs the analysis. In the 1004 report, for example, the appraiser is entirely responsible for the analysis, and must extract data from the market, consider comparable sales, apply adjustments to those sales, and conclude a value that is supported by the relevant data considered. The same process must be considered when evaluating the accuracy of an appraiser using CompCruncher to derive a value for a given property. One of the key differences however, is that the CompCruncher application enhances the process for the appraiser by bringing unprecedented amounts of data to the appraiser's desktop, including public records, MLS data, GIS images, flood maps, census data, and forecast data, to provide a comprehensive base of data to begin the analysis. In addition analytics are embedded in the application that empower the appraiser.

Collateral Valuation Report

File Edit Data Management Preferences Help

Workfile

Order
Data Sources
Subject
Neighborhood
Regression Analysis
Sales Worksheet
Listings Worksheet
Reconcile

ORDER INFORMATION

Appraisal/World Order ID: [] Get

Date Ordered: 05/16/2009 Date Needed: 05/16/2009

Report Format: [] Inspection Type: []

Intended Use: [] Valuation Date: 05/16/2009

Deliver To: [] Delivery Method: []

Appraiser Requested: [] Status: [] Fee: []

SUBJECT INFORMATION

Internal Order No.: []

Property Address: 13408 West Cabrillo Drive Unit: []

City/State/Zip: Sun City West AZ 85375

Country: [] Tax Year: [] Taxes: []

Borrower: [] Owner: []

Occupant: [] Under Contract: [] REO or Short Sale: []

Property Type: GFR [] Units: [] Sale Price: [] .00

Contact 1: [] Type: [] Phone: [] Notes: []

Contact 2: [] [] [] []

Contact 3: [] [] [] []

CLIENT AND LENDER INFO

Client Lender

Lender Information: Appraisal/World Client ID: []

Company Name: []

Address 1: []

City/State/Zip: []

Phone: [] Fax: []

Contact: []

Email: [] Phone: [] Ext: []

Map

1. Locate Property

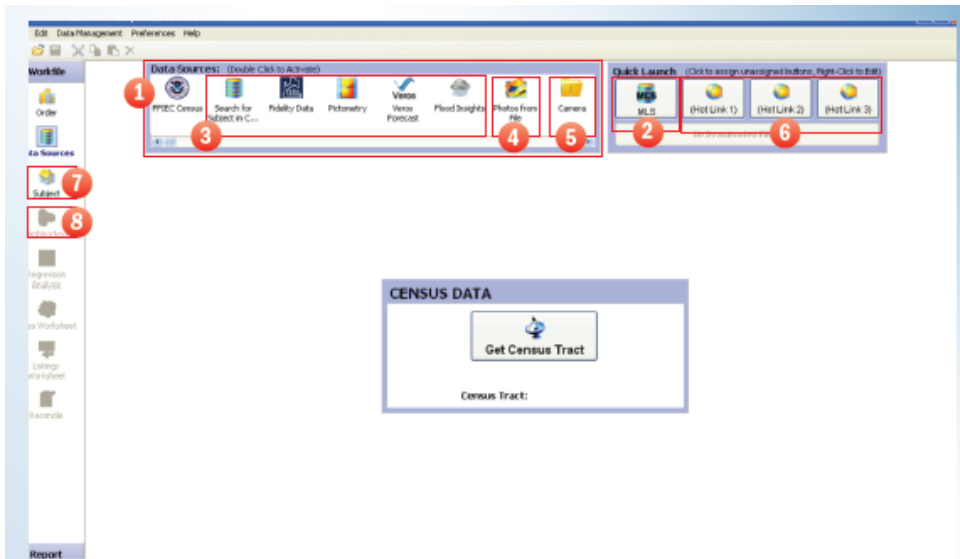
2. Set Boundaries

3. Client

4. Subject Property

Map data ©2009 Tele Atlas

1. CompCruncher locates the subject property and displays the subject.
2. The appraiser defines and draws the subject market area based on local market expertise.
3. Boundaries can be saved and modified. If saved, they can be easily used the next time an appraisal is completed in this area. They can ultimately be shared with others, increasing the knowledge base of the appraiser.
4. All appraisal reporting features, client information, contact information, and other relevant data is provided to the appraiser.



1. All web services are integrated and deployed through CompCruncher. These include
 - Census data
 - Internal database search functionality
 - Fidelity/LPS public record data: 500 sale records in subject market area
 - Pictometry imagery
 - Veros forecasting
 - Flood map—Flood Insights
 - Mapping—Microsoft
 - Aerial imagery—Google
2. Appraisers can import MLS data directly into the application from their own MLS; data can be appended into an internal database.
3. Other proprietary, enhanced, or internal databases can be used by the appraiser.
4. Photographs can be imported into CompCruncher.
5. Direct import from digital camera sources is also available.
6. Hot links on this page allow direct access to frequently used data sources, such as the assessors office, etc.
7. The appraiser can see if the subject property is contained within the database from any data source.
8. The appraiser can integrate general neighborhood-level property data from other properties in the vicinity to complete the appropriate subject data record.

Collateral Valuation Report

File Edit Data Management Preferences Help

Workfile

- Order
- Data Sources
- Subject
- Neighborhood
- Regression Analysis
- Sales Worksheet
- Listing Worksheet
- Records

1

Property Address: 13408 West Cabrillo Drive Unit:
City/State/Cp: Sun City West AZ 85375
County: MARICOPA AS Taxes: 2529.88 Tax Yr: 2008
APN: 903-53-187 Map Ref: [View](#) 0405.00
Legal Desc: CORTE BELLA COUNTRY CLUB PHASE 1 UNIT 1 MOR 624-24
Subdiv: Unknown Rights: Fee Simple HOA#: 0.88
School District: Unknown

2 Set Default Values for Blank Fields

Subject Listed ☐ Yes List Date: List Price: \$
Listing Comment:

3

Data Sources **View Images**

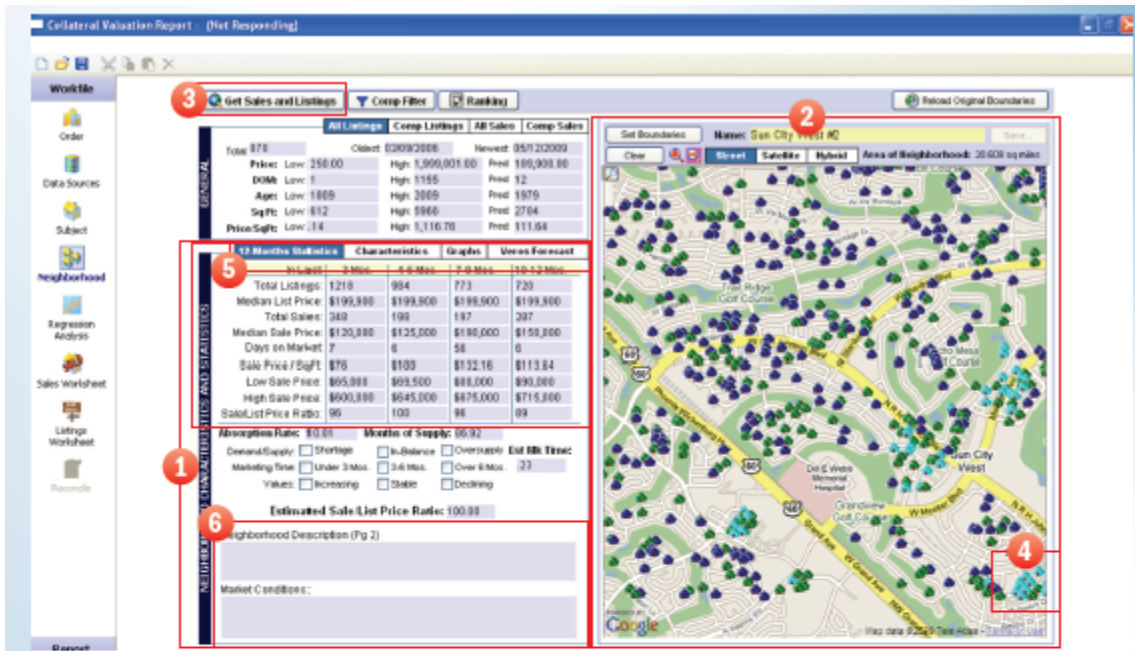
Right-Click on "Field" corner to Merge All, on Row Title to Merge Row, on Column Title to Merge Individual Datasource, and on Individual Cell to merge that cell. Individual Cell Merge will overwrite even existing data!

Field	Subject	MS Data
Include in Progress	Success	Set/MS
Use as Comp.		
Score		
Photos		
Street Address	13408 West Cabrillo	13408 W CABRILLO
Sale Price		
Sale Date	2004	2004
Sale	2006	2006
Site Area SF	10111	10111
Total Baths	2.67	2.67
Garage Spaces	02	02
Carport Spaces	00	00
Pantries	0	
Pool	NotPool/NotSpa	
Spa		
Basement Area	0	
Basement Finished Area	0	
MLS or ID		
Unit		
City	Sun City West	SUN CITY WEST
State	AZ	AZ
Zip	85375	85375

Sales History Sale \$: No Sales 3 Yr List \$: Date:
DOM Doc Numbers:

Report

1. The appraiser can compare data on the subject obtained through differing data sources and use the most reliable data. In addition, data from the sources can be combined to create a more complete data record.
2. The data can fill in blank fields not contained within public record from general data sources available for the neighborhood. This would include utilities, etc.
3. If data is available from other sources, the appraiser may complete the appropriate fields directly.



1. The neighborhood and market conditions section of CompCruncher completes all of the relevant data requirements for the 1004MC form. All of the data is automatically imported and calculated, and the relevant metrics are displayed for the user's examination and analysis. Note: The user does none of the calculation. Rather, all of the user's time can be spent examining the data and determining the current market conditions in the subject neighborhood.
2. All sales data is imported into CompCruncher, and the sales are displayed on the map with an appropriate color code within the previously defined neighborhood.
3. All of the listings are imported into CompCruncher and then displayed.
4. Non-SFR properties such as condos and townhomes are displayed in a different color code so that their impact can be evaluated by the appraiser later in the application.
5. Numerous tabs allow the user to see other relevant data, which will be demonstrated on the pages that follow.
6. The appraiser can make appropriate comments in two sections of this page: one is a neighborhood description and the second is a discussion of current market conditions based on the appraiser's examination of the market conditions metrics displayed in the matrix.

Collateral Valuation Report

File Edit Data Management Preferences Help

Workfile

Order Data Sources Subject Neighborhood Regression Analysis Sales Worksheet Listings Worksheet Research

Get Sales and Listings Comp Filter Ranking Reload Original Boundaries

All Listings Comp Listings All Sales Comp Sales

Area: 870

Price:	Low: 250.00	High: 1,999,881.00	Prod: 199,886.00
DOM:	Low: 1	High: 1155	Prod: 12
Age:	Low: 1808	High: 2009	Prod: 1979
SqFt:	Low: 612	High: 5966	Prod: 2794
Price/SqFt:	Low: 34	High: 1,118.76	Prod: 111.84

12 Months Statistics

Characteristic	3 Mos.	4-8 Mos.	7-8 Mos.	10-12 Mos.
Total Listings:	1218	884	773	728
Median List Price:	\$199,800	\$199,900	\$199,900	\$199,900
Total Sales:	389	196	197	267
Median Sale Price:	\$129,800	\$125,000	\$150,000	\$150,000
Days on Market:	7	8	56	6
Sale Price / SqFt:	\$78	\$100	\$132.18	\$113.64
Low Sale Price:	\$95,000	\$95,500	\$90,000	\$96,000
High Sale Price:	\$998,000	\$945,000	\$675,000	\$715,000
Sale/List Price Ratio:	95	100	96	89

Absorption Rate: 10.01 Months of Supply: 85.92

Generate Supply: ☐ Shortage ☐ Imbalance ☐ Overmarket ☐ Est Mth Times: 32

Marketing Time: ☐ Under 3 Mos. ☐ 3-6 Mos. ☐ Over 6 Mos.

Value: ☒ Increasing ☐ Stable ☐ Declining

Estimated Sale/List Price Ratio: 100.00

Neighborhood Description (Pg 2)

Market Conditions:

Set Boundaries Name: Sun City West #2

Clear Zoom Satellite Hybrid Area of Neighborhood: 20,609 sq miles

1 2 3 4

1. The appraiser can zoom in and out to gain a greater understanding of the neighborhood.

2. The appraiser can create a hybrid of both imagery sources, overlaying one on the other.

3. The appraiser can also bring up aerial imagery to discern neighborhood-level geographic features, boundaries, and the like.

4. The appraiser can check appropriate boxes that delineate the nature of the neighborhood and whether the market is declining, stable, or improving, similar to the 1004MC.

Comparative Valuation Report

File Edit Data Management Preferences Help

Workfile

Get Sales and Listings Comp Filter Ranking

Get Sales and Listings

Ad Listings Comp Listings All Sales Comp Sales

Total: 870 Oddest: 8/30/2006 Newest: 9/5/2009

Price: Low: 250.00 High: 1,395,001.00 Med: 595,933.00

Age: Low: 1 High: 1155 Med: 12

Age: Low: 1909 High: 2009 Med: 1979

Age: Low: 812 High: 999 Med: 2764

Price/SqFt: Low: .14 High: 1,111.10 Med: 311.84

12 Month Statistics Characteristics Graphs View Forecast

Location: ☐ Urban ☒ Suburban ☐ Rural

Build Age: ☐ Over 75% ☒ 25-75% ☐ Under 25%

Growth: ☐ Rapid ☒ Stable ☐ Slow

Price (\$000) Age (Yrs) Trends (Last 3 Months)

85	Low: 1979	Median List Price: 199500
758	High: 2009	Median Sale Price: 120000
155	Med: 1979	List to Sale Price Ratio: 66.03

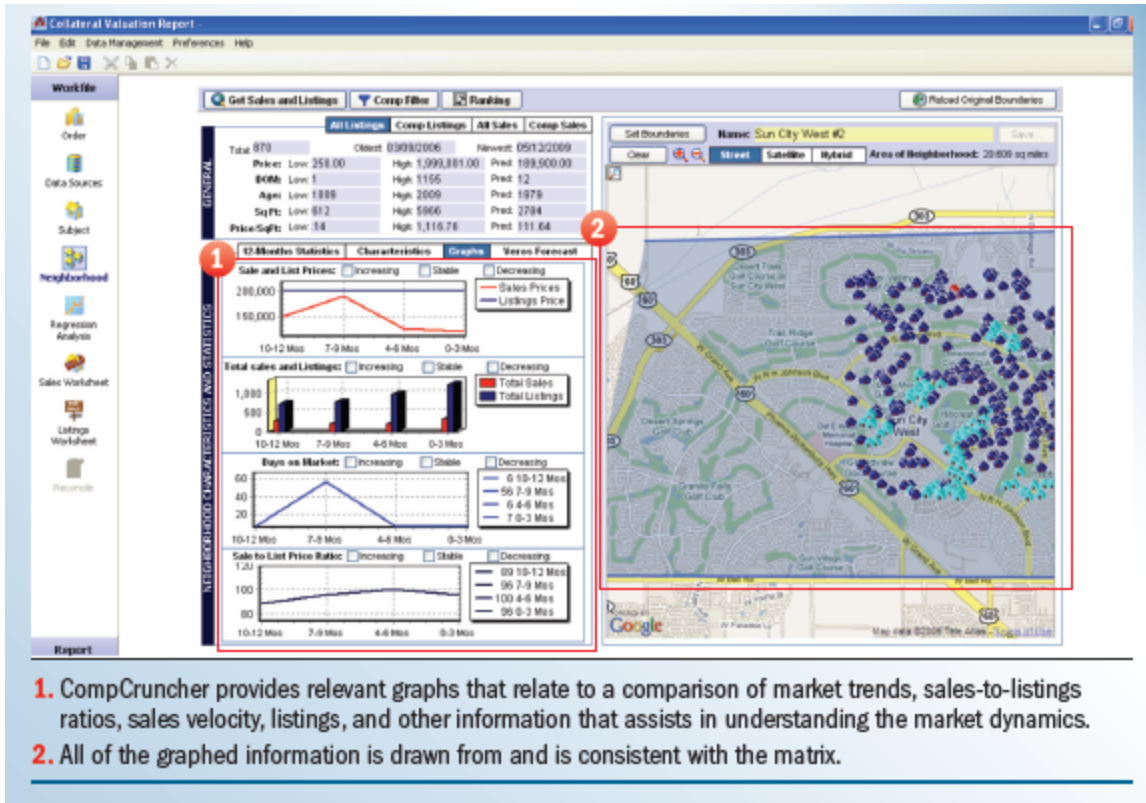
Total Properties Sold within Boundaries (Last 12 Months): 1,030

Neighborhood Description

Set Boundaries Relax Original Boundaries

Map: 2008 TMS Data Google Earth

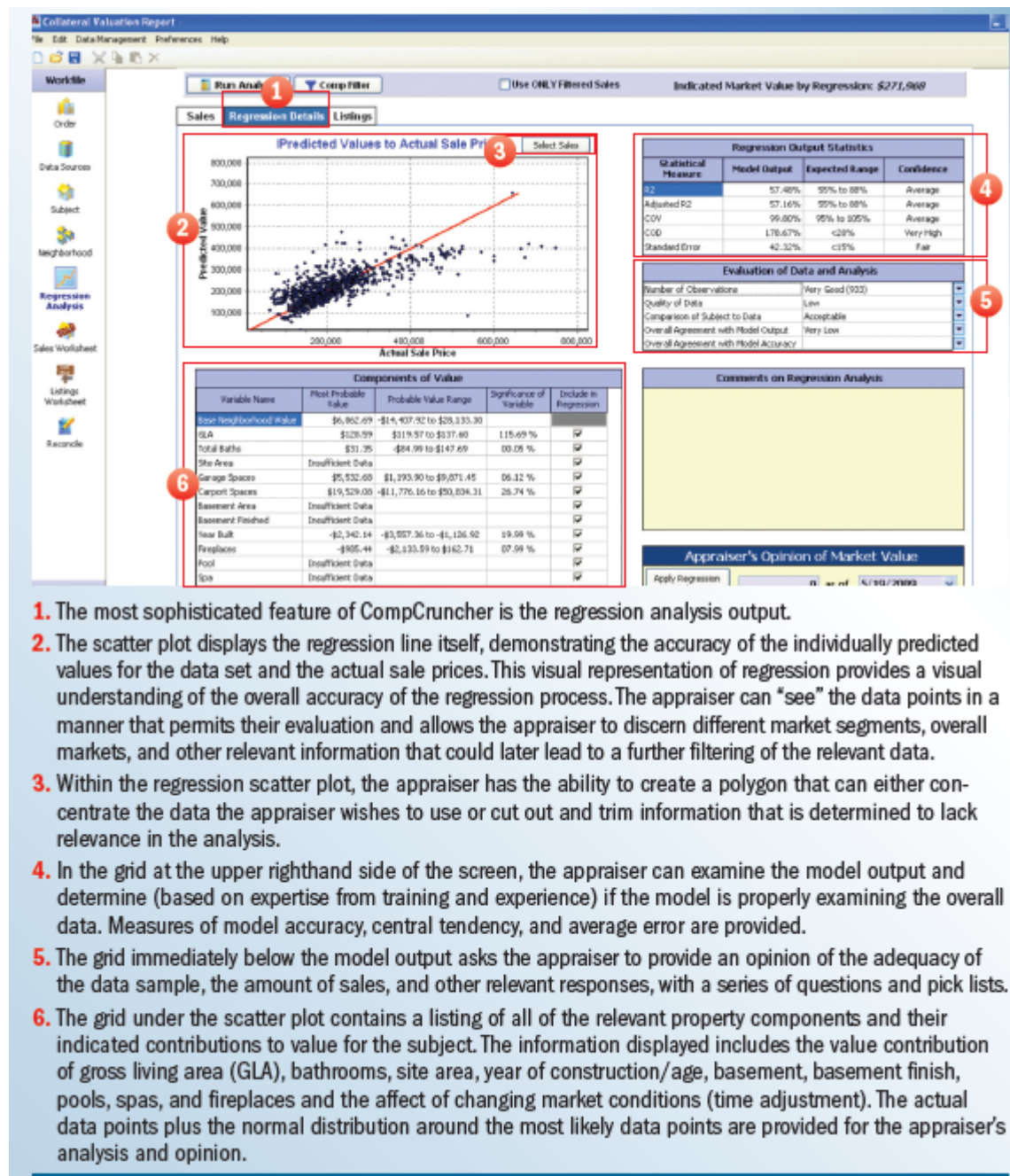
1. The appraiser, by clicking on a tab, can look at additional neighborhood-level information and can check boxes that pertain to the nature of the neighborhood development.
2. Additional information is provided automatically that further describes the nature of the housing stock in the subject neighborhood.



1. The core valuation engine of the CompCruncher application is the Regression Module, which enables an appraiser to properly perform sophisticated market analysis.

2. Sales are provided to the appraiser to examine and analyze. This is consistent with traditional regression in that an examination of the data allows an appraiser to examine the completeness of the data record, omissions that could impact data, and similar issues.

3. All data can be arrayed, sorted, and examined to determine its appropriateness for use in regression.



1. The most sophisticated feature of CompCruncher is the regression analysis output.
2. The scatter plot displays the regression line itself, demonstrating the accuracy of the individually predicted values for the data set and the actual sale prices. This visual representation of regression provides a visual understanding of the overall accuracy of the regression process. The appraiser can "see" the data points in a manner that permits their evaluation and allows the appraiser to discern different market segments, overall markets, and other relevant information that could later lead to a further filtering of the relevant data.
3. Within the regression scatter plot, the appraiser has the ability to create a polygon that can either concentrate the data the appraiser wishes to use or cut out and trim information that is determined to lack relevance in the analysis.
4. In the grid at the upper righthand side of the screen, the appraiser can examine the model output and determine (based on expertise from training and experience) if the model is properly examining the overall data. Measures of model accuracy, central tendency, and average error are provided.
5. The grid immediately below the model output asks the appraiser to provide an opinion of the adequacy of the data sample, the amount of sales, and other relevant responses, with a series of questions and pick lists.
6. The grid under the scatter plot contains a listing of all of the relevant property components and their indicated contributions to value for the subject. The information displayed includes the value contribution of gross living area (GLA), bathrooms, site area, year of construction/age, basement, basement finish, pools, spas, and fireplaces and the affect of changing market conditions (time adjustment). The actual data points plus the normal distribution around the most likely data points are provided for the appraiser's analysis and opinion.

Collateral Valuation Report

File Edit Data Management Preferences Adjustments Help

Number of Comps: 3 Apply Adjustments Edit Adjustments Generate Map Show MLS Details

Worksheet

Order
Data Sources
Subject
Neighborhood
Regression Analysis
Sales Worksheet
Listings Worksheet
Records

ITEM	SUBJECT	Comparable Sale #1	Comparable Sale #2	Comparable Sale #3
Address	13408 West Cabrillo Drive San City West, AZ 85375	22819 N De La Guerra Dr San City West, AZ 85375	13282 W LOS BARCOS DR San City West, AZ 85375	22528 N PADAYRO DR San City West, AZ 85375
Property	0.06 miles	0.242 miles	0.242 miles	0.256 miles
Sale Price	\$ 172,38	\$ 134,70	\$ 124,06	\$ 268,00
Score/PLA	N/A	3	3	3
ADJUSTMENTS	DESCRIPTION	DESCRIPTION	DESCRIPTION	DESCRIPTION
Date of Sale/Time	N/A	02/01/2009	04/15/2009	04/07/2009
Location	Suburban	Suburban	Suburban	Suburban
View	Typ Residential	Off Lot		
Condition	Average	Average	Average	Average
Design (Style)	Ranch	Mediter	Mediter	Mediter
Site Area	10,111 Sqft	0 Sqft	0 Sqft	0 Sqft
Actual Age	2004	2003	2004	2007
Above Grade	Total Sqms Sqft	Total Sqms Sqft	Total Sqms Sqft	Total Sqms Sqft
Floor Count	5 3 2.67	5 3 2.50	4 2 2.50	4 2 2.00
Gross Living Area	2068	2727.00	2784.00	2096.00
Basement	0	-84,998	-60,328	-3,729
Basement Finished	0			
Car Storage	02, CPO	02	03	02
Pool, Spa, FP, etc	No Pool, No Spa, No FP	0,0,FP1	Pool,Spa,FP1	0,0,FP1
Net Adj. (dollar)	Av: \$382,430	Net Adj 10.50% \$ -87,303	Net Adj 25.49% \$ -65,579	Net Adj 5.67% \$ -14,734
Adjusted Sale Price	WAvg: \$269,768	Gross Adj 19.57% \$ 332,697	Gross Adj 25.49% \$ 279,421	Gross Adj 5.89% \$ 245,166
Subject 3-Year Sale History				
Comparable #1 Sale History				
Comparable #2 Sale History				
Comparable #3 Sale History				
Indicated Value by Sales Comparison Analysis: \$300,000 Apply Weighted Avg Appraiser's Opinion of Market Value: \$300,000 Apply Weighted Avg				

1. All of the relevant sales examined by the appraiser have been scored and ranked within the application. The score measures the similarity of a given sale to the subject property. All physical and locational characteristics as well as date of sale are considered in this ranking.
2. The three most relevant sales are pushed into a traditional adjustment grid. The appraiser may choose these sales or select others that appear most appropriate.
3. The appraiser can examine the adjustments suggested from the regression analysis and apply personal preferences as to their appropriateness. At this stage, the adjustments can be modified and rounded as well.
4. The appraiser can apply the adjustments into the grid automatically. Additional editing can be performed directly within the grid if desired.
5. The appraiser can choose to conclude a value from direct sales comparison or apply a weighted average.

Summary of Valuation Conclusions

Neighborhood Price Low: **\$195,000**
 Neighborhood Price High: **\$516,000**
 Neighborhood Price Predominant: **\$255,000**
 Regression Indicated Value Range Low: **-\$9,209,186**
 Regression Indicated Value Range High: **-\$9,209,171**
Regression Indicated Value: -\$9,209,178

Sales Analysis Average Adjusted Value: **\$430,000**
 Sales Analysis Weighted Average Adjusted Value: **\$430,000**

Sale #	Sale Price	Net Adj %	Grs Adj %	Adjusted Price
1	430,000	0.00	0.00	430,000
2	430,000	0.00	0.00	430,000
3	430,000	0.00	0.00	430,000

Indicated Value by Sales Comparison: \$430,000

Listings Analysis Average Adjusted Value: **0**
 Listings Analysis Weighted Average Adjusted Value: **0**

Sale #	Sale Price	Net Adj %	Grs Adj %	Adjusted Price

Indicated Value by Listings Comparison: \$

Summary of Subject Data and Analysis

Client:
 Borrower:
 Street Address: **13745 W Center Drive**
 City, State Zip: **Lakewood, CO 80228**
 Room Counts: Total Bedrooms Baths Total Pages in PDF Report: **16**
 Gross Livable Area:
2 Opinion of Market Value: **0** Effective Date: **5/20/2009**

Appraiser Information

Appraiser Name: Mark Linn
 Company Name: Linn Appraisals
 Street Address: 12345 Applewood Street
 City, State Zip: Colorado Springs CO 90538
 License or Certification #: 1234567
 License/Certification Type: Certified General
 Issuing State: CO Expiration Date: 12/31/2010
 Date Report Signed: **5/20/2009**

Report Finalization

1. Check for Errors **2. Sign and Secure** **3. Deliver Report**

Review Workfile/Report

Run Review

Error Description

Go

1. All of the data considered within the application is provided to the appraiser in one spot, so that all of the various conclusions can be considered at once. Neighborhood high and low sales and the regression analysis, sales comparison analysis, and listings analysis conclusions are all provided.
2. The appraiser can examine all of this data in tandem and, after considering the strength of each data set, conclude a final value.
3. The appraiser can then automatically scan the report for errors. If an error is found by the application, the appraiser can then go to that section and correct or complete the information.
4. The appraiser can then digitally sign the report, create a PDF, and send it to the client. All data is paperless, digitally retained in a secure digital file format with signature authentication and with full transparency. This entire process creates a report in 35-45 minutes that is USPAP-compliant, fully transparent, and credible.

Conclusions:

While there is some room at the table for appraisers--the accepted experts in collateral valuation--to join the conversation, they must be prepared to offer not just the traditional array of products, but also demonstrate to their clients that they can meet their clients' needs with a broad range of efficiently produced and meaningful information. Quality will prevail if it can be delivered in a cost effective manner, but it must come clothed in products that meet the needs of the market for speed and cost.

By providing a solution for this client need, valuation professionals will emerge with the opportunity to dominate the market and will no longer have to share the field with purveyors of inferior and ultimately unsatisfying substitutes.

Appraisers performing URAR/1004 residential appraisals for \$400, and requiring five days to deliver, must consider how they can compete with a BPO provided in 2 days for \$75 to \$100. This is the reality of the valuation services marketplace. Alternative Valuation Products that can effectively meet the need of the “gap” market, i.e. greater than \$100 but less than \$400 in price points, will find demand by lenders and other users. Many lenders have indicated that they would be willing to use products that demonstrate better quality in comparison to BPOs, and involve an appraiser. Appraisers must utilize technology to maximize their efficiencies and deliver more client-driven products that will compete in the Alternative Valuation Product marketplace. With markets having faced their first decline in more than 15 years, there is recognition that a solid, supportable value has merit and must be the ultimate goal.

The solution is getting valuation professionals more engaged in the system, the process, and the solution. Appraisers have an opportunity to reshape the discussion, to create a collaborative opportunity to develop a better product--a product that the market needs, wants, and has an appetite for.

As has been the case in all facets of the knowledge-based economy, data standards will be the catalyst for redefining real estate analysis as Valuation 2.0. As standards become mainstream and their use and adoption increases, members of the appraisal profession have three potential courses of action:

- 1. Appraisers can ignore the message, assuming that standards have a long way to go before their impact is truly felt.**
- 2. They can participate in the process and help, as stakeholders, to shape and focus the standards that are developed.**
- 3. Or, they can, at the very least, be aware of and stay abreast of the progress of standards so that they can adapt to meet the challenges that standards adoption will bring.**

The real solution to some of the challenges of the appraisal profession lies in changing the current appraisal paradigm. Appraisers are not a one-trick pony, capable of only delivering a 1004 report solution to their clients. Appraisers must understand that they have the ability to deliver a broad spectrum of Alternative Valuation Products that can meet a wide variety of differing needs. Clients of appraisers need data sifted, analyzed, and pushed to them. Alternative information should be suggested and presented. Adjustments should be extracted from the market and offered and interpreted by the appraiser. All of the essential data necessary for whole market analysis should be provided to enable a more complete understanding of the subject and its market. The solution is about putting the appraiser in control and leveraging the available

data and technology to empower appraisers and benefit their clients. This is what appraisers need, and more importantly, this is what they should demand.

The best days of the valuation profession are not behind it, but rather, are awaiting it in the near future. But appraisers will have a responsibility to be vigilant, aware of the changes that are ongoing, and ultimately take advantage of the brave new world that awaits. By breaking the paradigm and embracing technology, appraisers can achieve true interaction with the valuation modeling process, maintaining USPAP compliance and ensuring that they leverage enhanced appraisal technology. The availability of new tools and technology that will interact with the profusion of data will change the face of valuation. The question that appraisers must answer is what role they wish to play in defining Valuation 2.0.

Information on the Author

Mark R. Linné, MAI, SRA, CAE, CRE, FRICS has been a leader in the design, deployment and adoption of interactive valuation technologies for more than a decade. Mr. Linné is an author, editor, speaker, columnist, inventor, AVM expert, data standards proponent, software developer and veteran appraiser who has focused on technology, data and valuation modeling and their roles in appraisal. Mr. Linné is the co-author or editor of three books for the Appraisal Institute: “A Guide to Appraisal Valuation Modeling” and “Practical Applications in Appraisal Valuation Modeling”. He is the editor and co-author of the newly released book: *“Visual Valuation: Integrating Valuation Modeling and Geographic Information Solutions”*. Mr. Linné serves as Executive Vice President-Education and Analytics for AppraisalWorld, Inc. Mr. Linné is also the Chair of the MBA/MISMO Commercial Appraisal Standards Committee, and serves as a representative of the Appraisal Institute to MISMO. He has been involved with the MISMO residential standard and is considered one of the nation’s pre-eminent experts in appraisal standards, automated valuation models, and the application of mass appraisal techniques to collateral valuation.