



ARCSys™

Automated Valuation Modeling





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Overview of AVM

AVM is a sophisticated tool that enables lenders to efficiently evaluate the value of loan collateral. By utilizing statistical methodologies such as linear regression, AVM identifies correlations in external factors and provides valuable insights into value changes. The importance of AVM in the lending industry cannot be overstated. It allows lenders to analyze and interpret valuation results, assess remaining equity, loan-to-value ratios, and identify loans at risk.

This information plays a crucial role in making informed decisions regarding loan refinancing and reducing costs associated with manual reviews. However, it is essential to recognize the limitations of AVM. While it provides valuable insights, it should be used in conjunction with other available information to ensure accurate and reliable valuations.

Current Concerns - Commercial Real Estate

Regulators are concerned about issues arising in the commercial real estate market due to the lasting COVID effects of work-from-home and changes in interest rates. These factors have started to significantly impact commercial real estate defaults and refinancings.

Have you analyzed the commercial real estate loans that are maturing over the next 24 months?

Have you prepared an Automated Valuation Modeling (AVM) of your CRE portfolio to determine which loans could be most at risk?

If the answer is no, ARCSys is here to help! Throughout this whitepaper, we will delve into the methodology, data requirements, best practices, and regulatory considerations related to AVM usage in the lending framework.

Methodology - Statistical Techniques in AVM

Linear regression is a widely used statistical technique that examines the relationship between a dependent variable and one or more independent variables. In the context of AVM, linear regression



helps identify correlations between external factors, such as interest rate changes and price indices behavior, and the changes in property values. By analyzing these correlations, lenders can gain valuable insights into the factors influencing value changes and make informed decisions.

This statistical technique plays a crucial role in AVM by enabling lenders to identify correlations in external factors and gain insights into value changes. By analyzing the data using linear regression, lenders can make informed decisions about loan collateral values and credit risk. This technique provides a systematic and data-driven approach to assess the impact of various factors on property values, allowing lenders to mitigate risks and optimize their lending strategies.

Data - Exploring AVM Datasets for Commercial Loans and Residential Real Estate

These key data points provide valuable insights into the loan collateral values and help lenders assess credit risk accurately. By analyzing this data, lenders can make informed decisions regarding loan refinancing, risk mitigation, and overall portfolio management. Understanding the key data points is crucial for accurate and reliable valuations. Below are some of the important data elements:

Residential Real Estate:

- **Origination date:** The date when the loan was originated
- **Original appraised value:** The initial appraised value of the property at the time of loan origination
- **Original balance:** The initial loan balance
- **Current balance:** The current outstanding balance of the loan
- **Original and current loan-to-value (LTV) ratio:** The ratio of the loan amount to the appraised value at origination or at present
- **Original FICO score:** The borrower's credit score at the time of loan origination
- **Current FICO score:** The borrower's current credit score
- **State/MSA/Zip:** The geographical location of the property, including state, metropolitan statistical area, and zip code
- **Loan type:** The type of loan, such as conventional mortgage, FHA loan, or VA loan
- **Variable or fixed:** Whether the loan is variable or fixed

Commercial Loans:

- **Origination date:** The date when the loan was originated
- **Original appraised value:** The initial appraised value of the property at the time of loan origination
- **Original balance:** The initial loan balance
- **Current balance:** The current outstanding balance of the loan
- **Original and current loan-to-value (LTV) ratio:** The ratio of the loan amount to the appraised value at origination or at present



- **Original and current debt service coverage ratio (DSCR):** The ratio of the property's net operating income to the debt service payment
- **NAICS:** The North American Industry Classification System code, which categorizes the borrower's industry
- **State/MSA/Zip:** The geographical location of the property, including state, metropolitan statistical area, and zip code
- **Loan type:** The type of loan, such as commercial mortgage, construction loan, or refinancing
- **Variable or fixed:** Whether the loan is variable or fixed

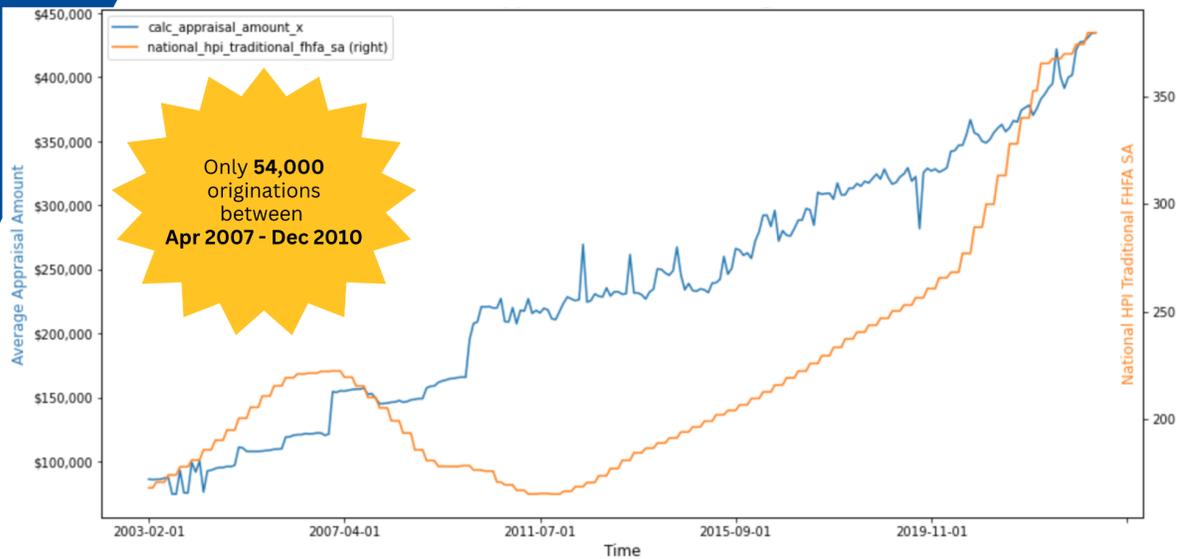
AVM Models in Action

It is key to interpret the results obtained from an Automated Valuation Models (AVM) report and analyze them effectively, particularly the assessment of remaining equity, loan-to-value ratios, and identifying loans that may be at risk due to collateral value changes.

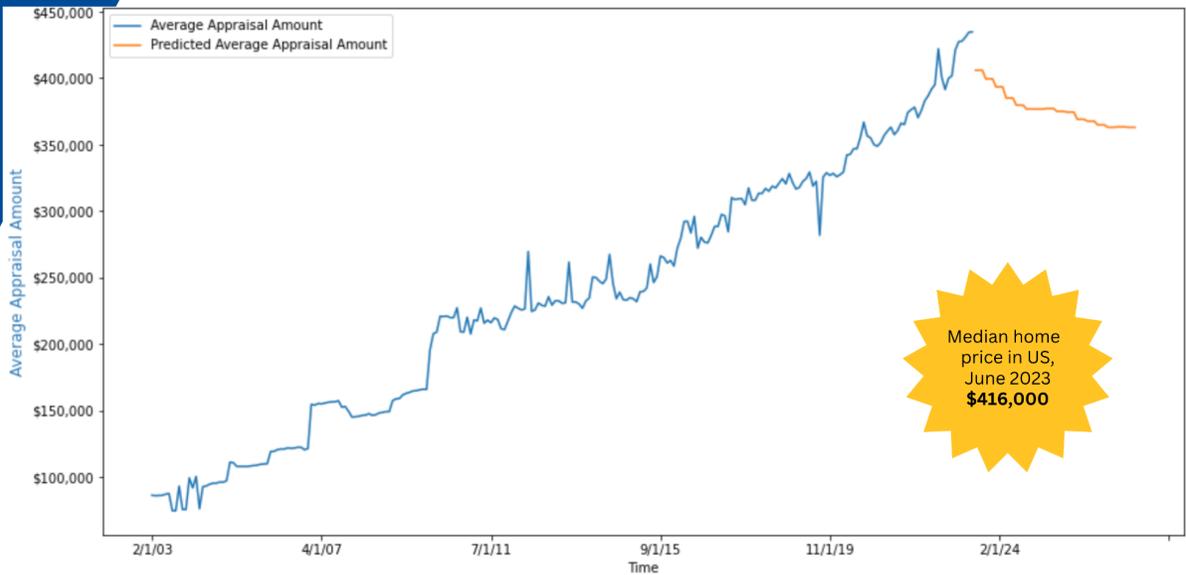
The results section of the AVM report provides valuable insights into the performance of the model and the accuracy of its predictions. It allows lenders to assess the reliability of the AVM in estimating collateral values and make informed decisions based on the findings. One important aspect to consider is the assessment of remaining equity. By analyzing the AVM results, lenders can determine the amount of equity that borrowers still have in their properties. This information is crucial in evaluating the risk associated with the loans and making decisions regarding refinancing or additional lending.

Loan-to-value (LTV) ratios are another key metric to focus on. The AVM results provide lenders with the current LTV ratios for each loan. By comparing these ratios to the original LTV ratios, lenders can identify loans that may have experienced changes in value and assess the potential impact on the loan's risk profile. By comparing the AVM-generated values to the institution's updated values and historical charge-off data, lenders can pinpoint loans that may require further evaluation or monitoring. This analysis allows lenders to proactively manage their loan portfolios and mitigate potential risks.

Average RRE Appraisal and HPI Through Time:



RRE Prediction in a 2008-2010 Economy:





It is important to note that while AVM results provide valuable insights, there are limitations to consider. The accuracy of the results depends on the quality and accuracy of the data used. Additionally, no model can guarantee 100% accuracy, and lenders should always consider other available information when making decisions about credit risk.

Important Considerations

One of the main limitations of AVM is the potential for inaccuracies due to incomplete or biased data. AVM relies heavily on the quality and accuracy of the data used for analysis. If the data is incomplete or contains biases, it can lead to inaccurate valuations and unreliable results. It is essential for lenders to ensure that the data used in AVM is comprehensive and unbiased to minimize potential errors.

Another important consideration is that AVM provides an estimate based on statistical models and algorithms. While these models are designed to be accurate, they are not infallible. AVM results should be viewed as a tool to supplement decision-making, rather than the sole basis for making critical judgments.

To overcome these limitations, it is crucial to consider other available information in conjunction with AVM results. This includes factors such as market trends, property inspections, and expert opinions. By incorporating additional sources of information, lenders can gain a more comprehensive understanding of the property's value and make more informed decisions.

Furthermore, it is important to note that AVM results may not capture unique characteristics or nuances of a property that can impact its value. Factors such as location-specific attributes, property condition, and market demand may not be fully accounted for in AVM models. Therefore, it is essential to supplement AVM results with human expertise and local market knowledge.

In order to maximize the value of these models, lenders should consider implementing improvements such as incorporating more data sources or improving data cleaning techniques; using more variables in the modeling assessment. Additional techniques should be used, such as regularly monitoring performance metrics for any changes in performance; for example, debt service coverage ratios will improve accuracy over time.

Automated Valuation Modeling With ARCSys:

By utilizing ARCSys' Automated Valuation Modeling service, you can ensure accurate and efficient valuation of properties, leading to more accurate credit loss estimates and compliance with regulatory requirements.



- Forecasted Property Valuation: AVM enables the forecasted valuation of real estate, for both consumer and commercial loans.
- Time and Cost Savings: AVM is a faster and more cost-effective alternative to traditional property appraisals. It saves time and money while delivering accurate results.
- Improved Efficiency: By automating the property valuation process, AVM improves efficiency and reduces errors associated with traditional manual property valuation methods.
- Customizable: ARCSys' AVM service can be customized to meet the unique needs of your organization. We can tailor the model to include or exclude specific variables depending on your requirements.

Contact ARCSys to get started with AVM today!