

Standards for Automated Property Valuation

Requirements and data-driven benchmarks to mitigate risk when replacing traditional appraisals with automated solutions.



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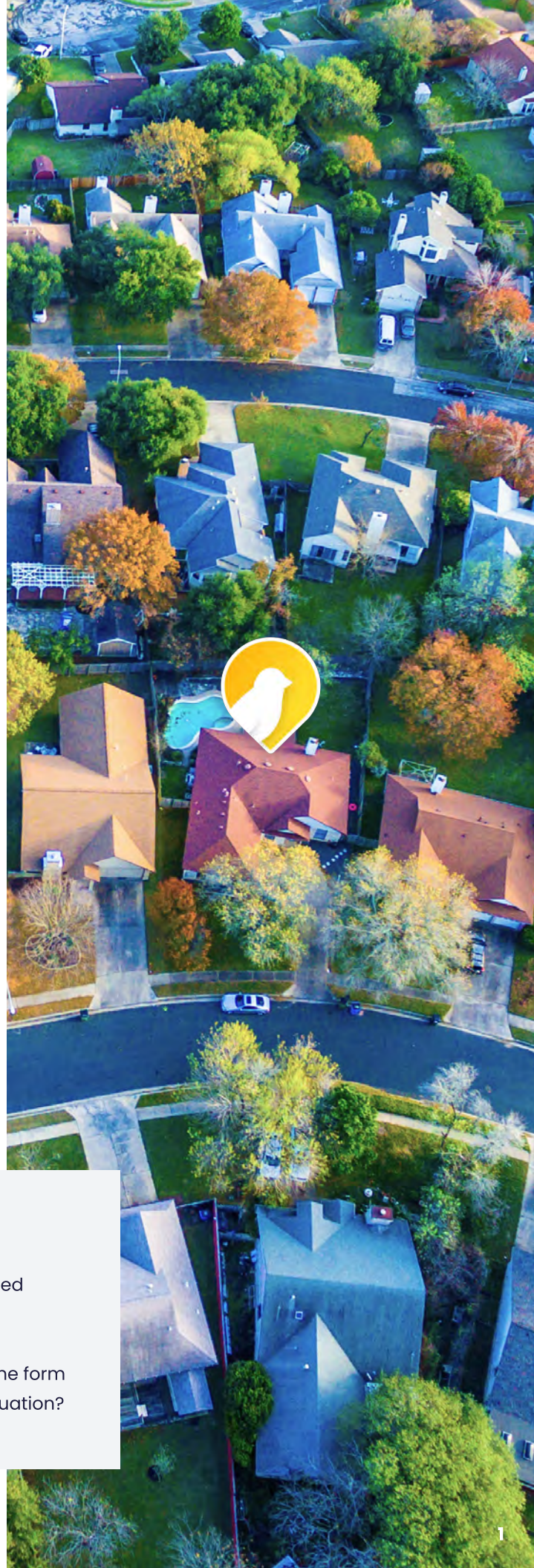


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Introduction

With the increase of technological advances in the housing market ecosystem, providing an alternative to a traditional appraisal with the use of these technologies has quickly become the headline in many discussions across the policy making community. With the negative findings on racial bias in traditional appraisals, combined with the acute need for consumers to have access to property valuation solutions that are faster, more accurate, and less expensive, the push for greater adoption of an automated valuation model (“AVM”) and/or a quantitatively-based technological tool for evaluations (“Evaluations”) has never been more needed.

While there is promise with AVMs and Evaluations, HouseCanary proposes a set of recommendations for policy makers and AVM providers around industry-wide standards and appropriate uses for an underwriting grade solution, as well as requirements for accuracy and fairness testing that exceed the standards presented in 12 U.S.C. 3354. **With the recommendations presented, we aim to reduce the burden on each individual depository institution, resulting in elimination of duplicative work, and propose a centralized solution, where AVM and Evaluation providers can be certified for use with respect to certain properties and/or transactions.** Our gold standard requirements provide a set of measurable, fact-based rules through which use of an automated solution in lieu of a traditional appraisal results in no additional risks. These rules create a basis for broad use of automated solutions for lenders in qualifying cases based solely on quantitatively-derived criteria.



This paper seeks to answer the following questions:

1. What should the standards be for an AVM to be deemed acceptable for use in a safe and sound way?
2. When should AVM models be condition-informed, in the form of an Evaluation, to produce an accurate property valuation?

Summary of Recommendations

Approach Standards

1. To appropriately value a property, a waterfall approach should be used. If an AVM is not an appropriate method based on the criteria, fall back to an Evaluation. If an Evaluation also fails to meet the applicable criteria, then an appraisal is needed.
2. Based on the standards presented in this paper, approximately 85% of all US properties can be approved for AVM or Evaluation use in lieu of a traditional appraisal.

Data Standards

1. AVM providers need both public record and MLS data to train accurate and reliable AVM models.
2. Appraised value should not be used during the training process of an AVM model.
3. For a property to be considered for an Evaluation, the following conditions must be met:
 - a. Address is known, complete and validated
 - b. Accurate building or parcel level latitude and longitude available
 - c. Accurate and available gross living area
 - d. Parcel lot size less than or equal to 10 acres
 - e. Property type known (single family, condo, etc.)
 - f. Adequate coverage from the AVM provider of all properties in the neighborhood and/or adjacent neighborhoods of subject property. At a minimum, 70% of coverage at the census block group level.
4. For a property to be considered for an AVM, it must pass all Evaluation criteria as well as:
 - a. High confidence of AVM for subject property with a forecast standard deviation less than 0.15 or a confidence score greater than 85%
 - b. At least 5 highly similar comparable properties available that have been sold or currently pending a sale within the last 365 days
 - c. AVM value for subject property falls within the 5th and 95th percentile of comparable properties when property differences are accounted for
 - d. AVM value for subject property falls within 5th and 95th percentile of the census block group distribution of price-per-sqft
5. AVM and Evaluation must be conditioned-informed (Human or Computer Vision/Image Recognition).
6. AVM valuation must have been created no more than 30 days prior to valuation date using closed comparables within the last 365 days to account for the latest market conditions.



Approximately 85% of all US properties can be approved for AVM or Evaluation use in lieu of a traditional appraisal.

Testing Standards and Metrics Recommendations:

1. Mean Percentage Error (“MPE”) should be between -2% and 2%
2. Median Percentage Error (“MdPE”) should be between -2% and 2%
3. Purchase Prediction Percentage Error at the 10% threshold (“PPE10”) should be greater than or equal to 80%
4. Prelist PPE10 should be greater than or equal to 60%
5. Third party testing of two core AVM benchmarks: purchase and prelist
6. AVM and Evaluation should be required to test for bias against minority groups

What is an AVM?

With many use cases for AVMs existing, we focus on the definition proposed in 12 U.S.C. 3354. An automated valuation model is “any computerized model used by mortgage originators and secondary market issuers to determine the collateral worth of a mortgage secured by a consumer’s principal dwelling.”

By emphasizing the word “any computerized model”, this allows room in the market for various mathematical, statistical, and/or machine learning models used in combination with different methodologies to estimate the value of a property. It is important for all AVMs to comply and adhere to a set of general quality control standards in order to be deemed safe and appropriate. 12 U.S.C. 3354 provides a list of general quality control standards that must be met for appropriate AVM use.

1. Ensure a high level of confidence in the estimates produced by automated valuation models.
2. Protect against the manipulation of data.
3. Seek to avoid conflicts of interest.
4. Require random sample testing and reviews.
5. Account for any other such factor that the agencies determine to be appropriate.

In this paper, we propose concrete recommendations regarding the processes and tools needed to address the broad standards stated above. We also extend these guidelines to cover Evaluations.

What is an Evaluation?

When an AVM fails to meet all the standards for appropriate use for a property, an Evaluation is the next possible alternative to an appraisal. An Evaluation is a condition-informed home evaluation that leverages high confidence AVM values in combination with independent data collection, along with market and subject characteristic validation. By combining onsite property data collection with deep contextual data supporting a value, software-based Evaluations have the potential to provide a solution that extends the benefits of a standalone AVM by adjusting the value based on the insights gained from the new data.

As well as meeting the 12 U.S.C. 3354 requirements for AVM use, an Evaluation must adhere to the [Interagency Appraisal and Evaluation Guidelines \(IAG\)](#). According to the IAG, an Evaluation is defined as “a valuation permitted by the Agencies’ appraisal regulations for transactions that qualify for the appraisal threshold exemption, business loan exemption, or subsequent transaction exemption. An Evaluation should also “contain sufficient information detailing the analysis, assumptions, and conclusions to support the credit decision.”



The be approved for use, an Evaluation must at a minimum do the following:

1. Identify the location of the property.
2. Provide a description of the property and its current and projected use.
3. Provide an estimate of the property’s market value in its actual physical condition, taking into account use and zoning designation as of the effective date of the evaluation (that is, the date that the analysis was completed), as well as any other limiting conditions.
4. Describe the method(s) the institution used to confirm the property’s actual physical condition and the extent to which an inspection was performed.
5. Describe the analysis that was performed and the supporting information that was used in valuing the property.
6. Describe the supplemental information that was considered when using an analytical method or technological tool.
7. Indicate all source(s) of information used in the analysis, as applicable, to value the property, including:
 - a. External data sources (such as market sales databases and public tax and land records); and
 - b. Property-specific data (such as previous sales data for the subject property, tax assessment data, and comparable sales information).
8. Provide evidence of a property inspection.
9. Provide photos of the property.
10. Provide a description of the neighborhood; or local market conditions.
11. Include information on the preparer when an evaluation is performed by a person, such as the name and contact information, and signature (electronic or other legally permissible signature) of the preparer.

Though this list of requirements may seem extensive, technological advances within the real estate ecosystem have resulted in major efficiencies that allow much of this information to be quantitatively-derived. By using information provided by human inspectors to augment this data-first approach, Evaluation vendors with appropriate technological investment should be able to meet these standards and therefore have their Evaluations certified for use when deemed appropriate. These software evaluations are products, and products are not “compliant” in themselves. Products can be designed in a compliant manner but their appropriate use by the institution is a necessary condition for full compliance. Compliance requires the appropriate use of any product in line with regulatory requirements, which is the responsibility of the institution relying on the chosen product.

Waterfall Approach

An AVM or Evaluation will not be the appropriate approach to valuing every property in the United States. However, based on a sample of 20 metropolitan statistical areas (“MSAs”) and using a combination of Multiple Listing Service (“MLS”) and public record data, we estimate that 40% of all US residential properties can be appropriately valued using a standalone AVM and an additional 45% can be appropriately valued using an Evaluation. This gives 85% coverage of all US residential properties that could be valued using quantitatively derived models. With the recommendations of standards that follow, HouseCanary proposes a waterfall approach to determining whether a property can be valued using an AVM or Evaluation in lieu of a traditional appraisal.

If certain standards and qualifications are met and an AVM is deemed to be an appropriate valuation method, then full automation is appropriate. When an AVM fails to meet these criteria, the next best solution is to perform an Evaluation with independent inspectors and price validation. Finally, if any of the critical criteria suggested below fail, then use of a traditional appraisal is needed and an AVM or Evaluation should not be used.

With this waterfall approach, additional risks that may materialize with automation will greatly be reduced providing safe, trustworthy, and transparent valuations of consumer dwellings.



Standards for Proper Use of AVMs and Evaluations

To strengthen the existing quality control standards for AVMs and Evaluations, which are fairly broadly defined, HouseCanary strongly recommends more specific requirements for how these standards should be put into practice. Requirements around data, condition, neighborhood statistics, as well as appropriate comparable properties, are needed for an AVM or Evaluation to value a property with sufficient accuracy and reliability.

Data Standards

At a minimum any automated valuation estimate should utilize two primary transactional residential real estate datasets in order to ensure comprehensive coverage of transaction data. The two datasets typically making up this population are public record data, primarily county recorder data, and MLS data.

County recorder data includes deeds recorded with each real estate transaction, and in most markets includes the closed arm's-length sale price. Other relevant public record data includes annual assessments along with any property characteristics used in those assessments, as well as mortgage recordings.

MLS data includes the history of listing prices, contracts, and closing prices for properties listed for sale on an MLS. These records also include a set of property characteristics and other descriptive fields associated with each listing. The primary significance of this dataset is that MLS data offers a duplicate set of closed prices that can be compared and/or verified alongside county deed records. Furthermore MLS is the primary source of data around the history of listed prices for a given property.

While we believe appraisal data should be used to verify property characteristics, we do not think it should be used to train an AVM. With the recent studies done by Freddie Mac [\[1\]](#) [\[2\]](#), as well as the numerous reports of appraisals being subject to human bias and unfair valuations, training a model on this data would eventually lead to similar results.

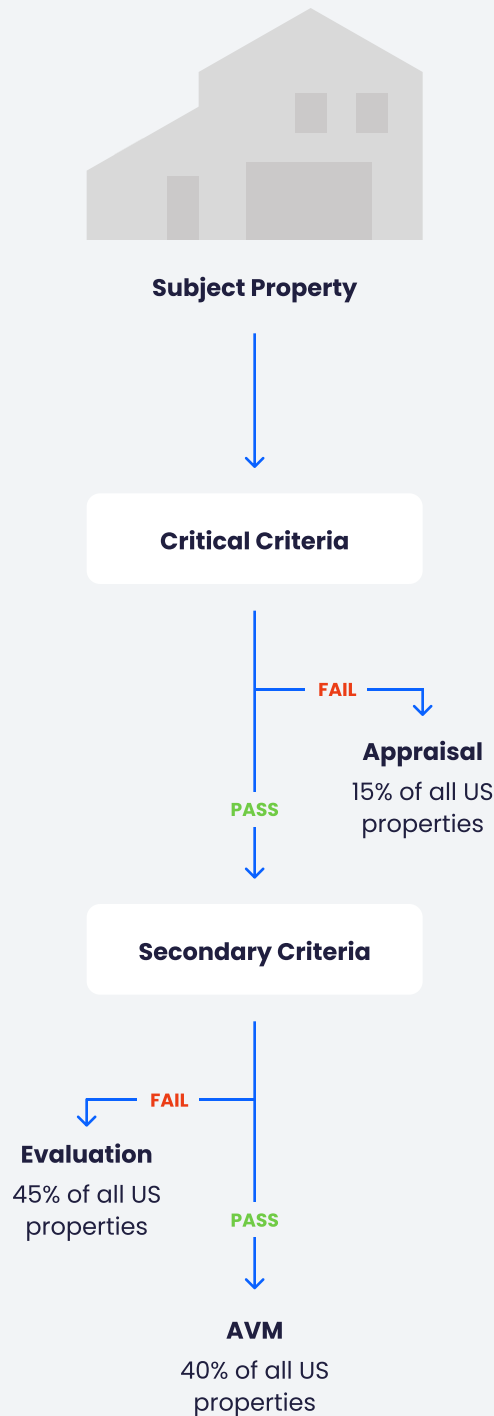
At HouseCanary, we believe that leveraging both public and MLS datasets, while excluding appraisal data, to train an AVM is critical in producing accurate and reliable value estimations of a property. Without both datasets present, reaching nationwide coverage would suffer due to: a) certain "non-disclosure" markets and b) not being able to validate property characteristics across multiple sources. It should be noted that MLS data is only available to MLS participants, which include fully licensed brokerages such as HouseCanary.

Critical and Secondary Criteria

At HouseCanary we recommend a waterfall approach to deciding whether an AVM, Evaluation, or Appraisal is appropriate for a particular transaction. For an AVM or Evaluation to be considered and certified for use, a property should be required to pass the following criteria.

The first level criteria, or "Critical Criteria," can be used to determine whether an AVM or Evaluation meets the requirements presented in 12 U.S.C. 3354, and also includes additional criteria that we recommend to ensure that an automated valuation meets baseline quality standards. The Critical Criteria can be summarized as validating that enough data is available about the subject property to appropriately select comparable properties. Without sufficient data regarding comparable properties, a traditional appraisal is needed to accurately estimate the value.

The AVM Waterfall



Critical Criteria Summary

1. Address is known, complete and validated.
2. Accurate building or parcel level latitude and longitude available.
3. Accurate and available gross living area.
4. Parcel lot size less than or equal to 10 acres.
5. Property type known (single family, condo, etc).
6. Adequate data coverage of all properties in the neighborhood and/or adjacent neighborhoods of the subject property. At a minimum, 70% of coverage at the census block group level.

Failure to satisfy all of the criteria listed would indicate that an appraisal is needed because there is insufficient data and property information for an AVM or Evaluation to confidently estimate the value of a property. If however, the above-listed criteria is met, the property would qualify for an Evaluation at a minimum in lieu of an appraisal without increasing the risk. The next step in the waterfall would then be to apply a second tier of criteria, or "Secondary Criteria", which would be used to determine if an AVM can be used.

Secondary Criteria Summary

1. High confidence of AVM for subject property with a forecast standard deviation less than 0.15 or a confidence score greater than 85%.
2. At least 5 highly similar comparable properties available that have been sold or pending for sale within the last 365 days.
3. AVM value for subject property falls within the 5th and 95th percentile of comparable properties when property differences are accounted for.
4. AVM value for subject property falls within 5th and 95th percentile of the census block group distribution of price-per-sqft.

If a property meets all the standards from the Critical Criteria as well as the Secondary Criteria, then the property should qualify for the use of an AVM in lieu of an appraisal without increasing the potential risks.

Conditioned Informed

Our last recommendation is that both AVMs and Evaluations should be condition informed. One requirement for purchasing a mortgage is to provide the current condition of the property “using the standardized C1-C6 property condition and quality ratings scale.” In order for AVMs and Evaluations to be a replacement for an appraisal, they too should be condition informed. This requirement can be completed two different ways: 1. using a human inspector that visits the property, or 2. leveraging artificial intelligence and computer vision/image recognition models to measure the condition.

If an AVM is using images of the property to estimate its current condition, then HouseCanary suggests requirements about the images being used. The images used should be geotagged as well as time-stamped in order to ensure their authenticity. If each photo is time-stamped and geotagged, then users of AVMs can be more confident that the image belongs to the subject property and represents the current state of the property. In addition, HouseCanary also recommends that at least 2 photos of the main kitchen and each of the living areas as well as 1 photo for every other room in the house be used. This provides the image recognition models enough data to accurately and appropriately estimate the condition of the subject property. If these requirements can't be met, a human inspector should visit the site in person to verify the condition of the property.

Testing Standards for Accuracy

In addition to the criteria above, in order to promote transparency and increase the confidence in AVMs and Evaluations, testing and reporting model accuracies should be a requirement. This is clearly stated in FIRREA section 1124 a.4. Access to these reports increases model transparency without the risk of exposing intellectual property. In the following sections, we discuss the minimum requirements for random testing and reviews of the models underlying AVMs and Evaluations.

Target Variable

In order to generate a benchmark that can be used to measure model performance, the model's valuation estimate should be measured against a market observable price. It is HouseCanary's recommendation that the arm's-length sale price should form the basis for the target variable in all benchmarking situations.

First, the arm's-length sale price is a market observed price, and is not itself an estimate or opinion of value.

Second, by definition of being at arm's-length, the closed price represents the value settled upon between two unrelated parties, each acting in their own self interest.

Metrics

In order to meet the requirements of FIRREA section 1124 a.4, AVMs used to estimate the value of a property are required to be evaluated with random sample testing and reviews. When measuring the accuracy of an AVM on a random sample, it is important that all providers use the same metric to allow for comparisons between providers. We recommend that all AVM accuracies should be reported in terms of percent error. The percent error measurement indicates how accurate the AVM estimate is after normalizing for the sale price of a property. Percent error is defined as the following:

$$\text{Percent Error} = \frac{\text{Estimated Value}}{\text{Sale Price}} - 1$$

Aside from percent error, at a minimum, HouseCanary recommends two different types of metrics when performing random sample testing and review: mean-based and percentile-based statistics.

Mean percent error (MPE) and mean absolute percent error (MAPE) should always be included when reporting mean-based statistics. The MPE is the computed average of percent errors, and since negative and positive values can offset each other, this is a standard way to measure the bias of a model. It can help analysts answer the question, “Does this AVM have a tendency to undervalue or overvalue properties?”. The MAPE is the computed average of the absolute value of the percent error. This transforms all negative percent errors to positive percent errors, measuring the overall predictive accuracy of the AVM.

Mean-based statistics are important in evaluating the accuracy and bias of models, but they are also vulnerable to outliers. These outliers can heavily influence the accuracy measure, causing the AVM to appear inaccurate overall. That is why, in addition to MPE and MAPE, we recommend that percentile based statistics also be reported.

Percentile-based statistics are robust to outliers, and similar to mean-based statistics, median percent error (MdPE) and median absolute percent error (MdAPE) are indicators of the bias and accuracy of an AVM. The major difference between the two is how they are calculated. The MdPE and MdAPE use the median, or the 50th percentile, as a statistic, instead of the mean.

While MdPE and MdAPE are accurate descriptors of the center of the error distribution, other percentile statistics help determine the overall shape and variance of the errors. PPE 5, PPE 10 and PPE 20 are used to measure a model’s percent prediction error at the 5, 10, and 20 percent thresholds. PPE is the percentage of the AVM estimates that fall within the threshold error. For example, a 50% PPE 5 means 50% of the AVM values in the random sample test are within 5% of the benchmark value. The PPE statistics measure the variance of the distribution. A high PPE 5, PPE 10 and PPE 20 indicate a tight distribution around 0, representing an appropriately trained AVM.

By requiring the mean- and percentile-based statistics above, when reviewing a random sample test of an AVM, an analyst can quickly identify if an AVM is appropriate for the use case at hand. Beyond reporting requirements, we believe an AVM should equal or surpass the performance of traditional appraisals to be deemed acceptable as an appraisal replacement tool. Leveraging data provided by Fannie Mae [\[1\]](#), we propose the following four minimum requirements for AVM accuracy:

1. MPE is between -2% and 2%
2. MdPE is between -2% and 2%
3. Purchase PPE10 greater than or equal to 80%
4. Prelist PPE10 greater than or equal to 60%

Levels of Measurement

Increased transparency will lead to increased confidence in AVMs among mortgage originators and secondary market issuers. To enhance that transparency, we recommend that AVM providers report the metrics described above at varying levels of granularity. These additional levels of measurement should include, but need not be limited to: geography, property type and model confidence.

For geography, the mean and percentile metrics should be reported at a national level, but also reported at different levels of geography. At a minimum, an accuracy report on an AVM should include the metrics at a State, County, and MSA level. This would highlight what locations the AVM achieves high performance and where the model suffers. This is important when testing for fairness and bias mentioned later in the report.

AVM reports should also be broken down by property type: Single Family Detached, Condo, Multi-Family Housing, etc. This would allow AVMs trained for specific property types to show their validity in valuing that type of property and get certified for use in specific use cases.

AVM accuracy reports should also include the metrics grouped by confidence levels, i.e., when an AVM is confident in its estimation, what is the accuracy? When the AVM is unsure and has low confidence, what is the accuracy?

With all of the above information included in an accuracy report, transparency is promoted, allowing analysts to make decisions on the subset of housing for which the AVM is appropriate. Without the above metrics, transparency would diminish, and the confidence in using AVMs would decrease. At the same time, providing these statistics not only promotes transparency but also interpretability of the AVM without risking the intellectual property of the AVM.

Non-Disclosure Markets

There are 15+ states currently where the transaction price does not have to be legally recorded with the county recorder. Consequently, the deed records in these states generally do not include the closed sale price, and often include a placeholder value such as \$10.

In order to do model benchmarking in these states, one generally needs to go to the MLS records. In these cases, more often than not, the agent will record the closed sale price within the listing record. Using MLS sourced prices in these non-disclosure markets allows for model benchmarking.

The non-disclosure situation is another example of why we suggest that both public record data and MLS data form the foundation of a residential real estate dataset.

Benchmarks

Continuous benchmarking of AVMs is vital in identifying performance decay. We recommend two benchmarks that measure AVM performance at different points in the life cycle of a property transaction: purchase and prelist.

The purchase benchmark examines the percent error of the AVM as it existed just prior to having the knowledge of the sales price. This benchmark allows the AVM to use the list price as an anchor for making predictions. The

observed error rates on the purchase benchmark serve as a proxy for the valuation uncertainty one would observe in purchase transactions where the property was openly listed for sale on the MLS prior to closing.

The prelist benchmark examines the percent error of the AVM as it existed prior to a property listing for sale, and then compares it to the eventual sold price associated with that listing. We suggest restricting this set of observations to properties that have not listed or sold within the prior five years to truly simulate an off market situation. We believe comparing the accuracy of the AVM value when there was no recent list price to anchor off of provides a truer measure of the AVM's ability to estimate off-market value. The observed error rates on the prelist benchmark serve as a proxy for the valuation uncertainty one would observe in a refinance situation (or any other off-market situation) where the property was not listed for sale on the MLS, or recently sold, at the time the valuation estimate was generated.

Third Party Testing

Section 1135 of FIRREA sections a.2 through a.4 requires that AVMs should be subject to random sample testing and reviews. For these reasons, HouseCanary recommends that AVM providers complete frequent third party testing and reviews.

Third party testing provides trust and equal opportunity across AVM providers by providing objective, independent evaluations of AVM quality. With the third party testers being independent of the AVM provider, the risks of data manipulation and conflicts of interest are greatly reduced.

Recency of AVMs

An AVM valuation must have been created no more than 30 days prior to the valuation date using the most recent closed comparables and latest market conditions. In other words, an AVM model needs to be retrained at a minimum on a monthly cadence to guarantee the value is an appropriate estimation of the property valuation at the time of the inquiry.

Model Validation by Segment

We recognize that there are instances in which an AVM might satisfy our suggested performance requirements in some geographic locations or for certain property types but not for others due to insufficient data, or other reasons. For that reason, we recommend validating models for specific segments of the population as well as globally. These segments could include type of property (single-family detached, condominium, etc), geographic location (county, metropolitan statistical area, state, etc), total loan value and/or loan-to-value, or any other segment of interest.

For example, if a vendor could show that its AVM met our suggested performance requirements in a set of specific counties for single-family detached properties, we believe that AVM should be considered an appropriate appraisal replacement tool in those counties for those kinds of properties, even if the data does not support using the AVM as an appraisal substitute in every location or for every type of property.

As noted above, we believe the minimum benchmark criteria for automated valuations should be in line with the

benchmark values observed in appraisal valuation errors. In particular, for a refinance or other off-market situation, we believe the reference appraisal error should be one in which the appraisal was done blind to any contract price [1].

Fairness and Bias

In recent years, there has been evidence suggesting that systematic bias present in the real estate ecosystem impacts minority populations with appraisals and AVMs. At HouseCanary we take fairness of valuations seriously and consider it an important requirement for using AVMs in all cases. Recently, HouseCanary released a nationwide study that showed AVM technology, when trained appropriately, reduced and eliminated any statistically significant bias between different minority census tracts [1]. For those reasons, we suggest the following requirements for measuring and testing fairness in AVMs and Evaluations.



Racial Disparate Testing for AVMs

In order to discover any negative variance associated with race or ethnicity, we suggest that racial disparate testing should be done on AVMs. By requiring racial disparate testing, this would minimize systematic bias that could negatively impact protected minority groups.

While performing racial disparate testing at the property level is ideal, collecting this attribute on every property is impracticable and would increase the amount of resources needed for automating valuations. We suggest and support performing the racial disparate test at a census tract level, using various thresholds to determine the race of the individual property.

The US Census Tract level data includes statistics on household demographics available to the public. Based on the household demographics, you assign a race to every census tract based on a percentage threshold requirement (HC tests both 50% and 80%). If a census tract has a larger percentage of a certain race that exceeds the threshold, then every property in the tract is assumed to have the same race.

With census tract race identified, AVM providers could test and provide the results on the accuracy similarities and differences between White and minority census tracts, and provide the analysis supporting if the differences are statistically significant. This provides constant fairness measures as well as transparency to how well an AVM performs on different subpopulations.

Evaluation Fairness

The formulation of an Evaluation is such that it isolates the site visit where data is collected about the condition of the subject from the valuation analysis that is generated by an AVM and then finalized by Quality Control professionals. Whereas a traditional appraisal or BPO would generally be completed in its entirety by the same person that visits the home and enters and potentially meets the homeowners, Evaluations include a natural separation of tasks such that any bias that might be a factor with a single person completing a report from inspection through value conclusion is precluded. This separation minimizes the risk that the biases of the person conducting data collection to establish a condition assessment will improperly influence the value that ultimately is determined for the report.

Conclusion

This paper presents a set of recommendations for the use of AVMs and Evaluations in lieu of appraisals. These recommendations are based on a set of industry standards and data benchmarks to mitigate risk when replacing a traditional appraisal with an automated solution. In order to move towards consumer-friendly solutions that lower costs, shorten turnaround times, and reduce racial bias, in a manner that does not increase risk for lenders, greater adoption of AVMs and Evaluations is needed. We present not only data requirements but also testing standards with the goal of reducing the burden on each individual depository institution and creating a centralized solution where AVM and Evaluation providers can get approved and deemed appropriate for use when these requirements are met. By adhering to these guidelines, HouseCanary firmly believes that the potential risks associated with automating a solution for appraisals could be greatly reduced and eliminated in most cases.

AVM Certified Checklist (Manual)

Provider:		Date of Model Run:	
Mean PE:		Median PE:	
PPE10 Purchase:		PPE10 Prelist:	

Description	Remarks	<input checked="" type="checkbox"/>
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CRITICAL CRITERIA

Address is known, complete and validated.		<input type="checkbox"/>
Accurate building or parcel level latitude and longitude available.		<input type="checkbox"/>
Accurate and available gross living area.		<input type="checkbox"/>
Parcel lot size less than or equal to 10 acres.		<input type="checkbox"/>
Property type known (single family, condo, etc.)		<input type="checkbox"/>
70% of coverage at the census block group level.		<input type="checkbox"/>

SECONDARY CRITERIA

High confidence of AVM for subject property with a forecast standard deviation less than 0.15.		<input type="checkbox"/>
At a minimum, 5 highly similar comparable properties available that have recently been sold or currently pending sale.		<input type="checkbox"/>
AVM value for subject property falls within the 5th and 95th percentile of adjusted comparable properties.		<input type="checkbox"/>
AVM value for subject property falls within 5th and 95th percentile of the census block group distribution of price-per-sqft.		<input type="checkbox"/>

AVM Certified API

Request

[https://api.AVM.com/v2/property/value_analysis/check?
street_address=4123+Main+St&zipcode=94132&estimated_value=1050000&include_comp_based_analysis=true](https://api.AVM.com/v2/property/value_analysis/check?street_address=4123+Main+St&zipcode=94132&estimated_value=1050000&include_comp_based_analysis=true)

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