HouseCanary

The Essential Guide to

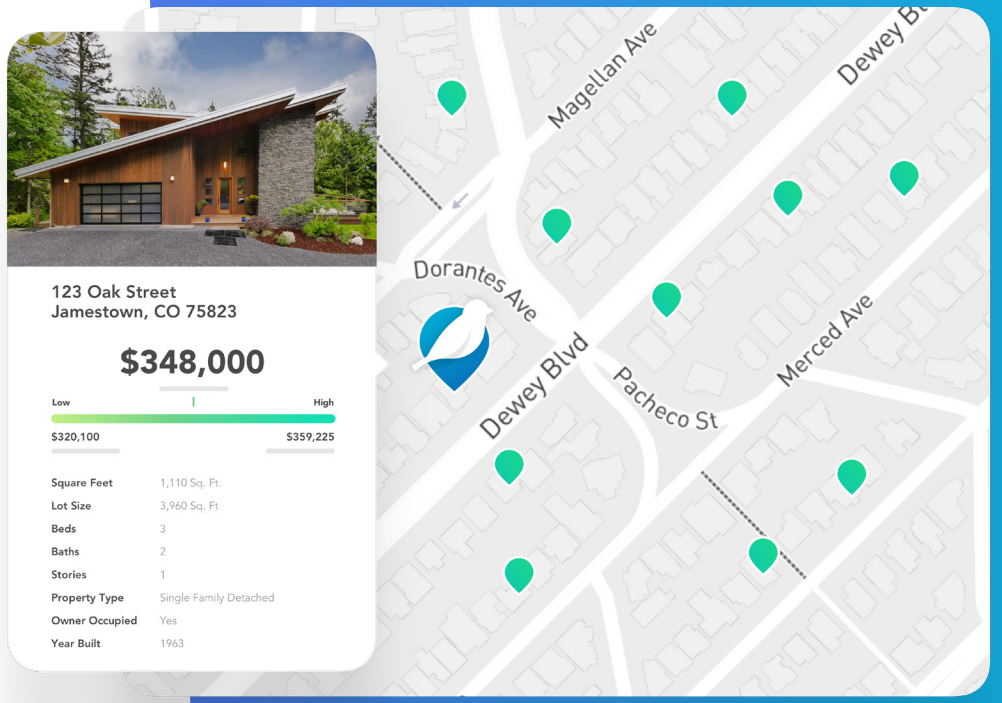
AVM Accuracy

Finding the perfect home valuation product

When you want to know how much a used car is worth, there's Kelley Blue Book. Yet to value an antique or a piece of art, you'll need to ask an expert's opinion. Valuing real estate is a process that mixes techniques from both approaches making it unlike any other — no two homes are exactly alike, even if the only differentiator is location, but the standardization of things like a bedroom, kitchen, or bathroom allow for statistical rigor to be applied to valuing those features.

Creating an accurate home valuation means accounting for dozens of variables and outliers. For that reason, valuing homes has traditionally involved a human expert to determine, weigh, and reconcile all of those variables, landing on a value that considers all of them in addition to the current market environment.

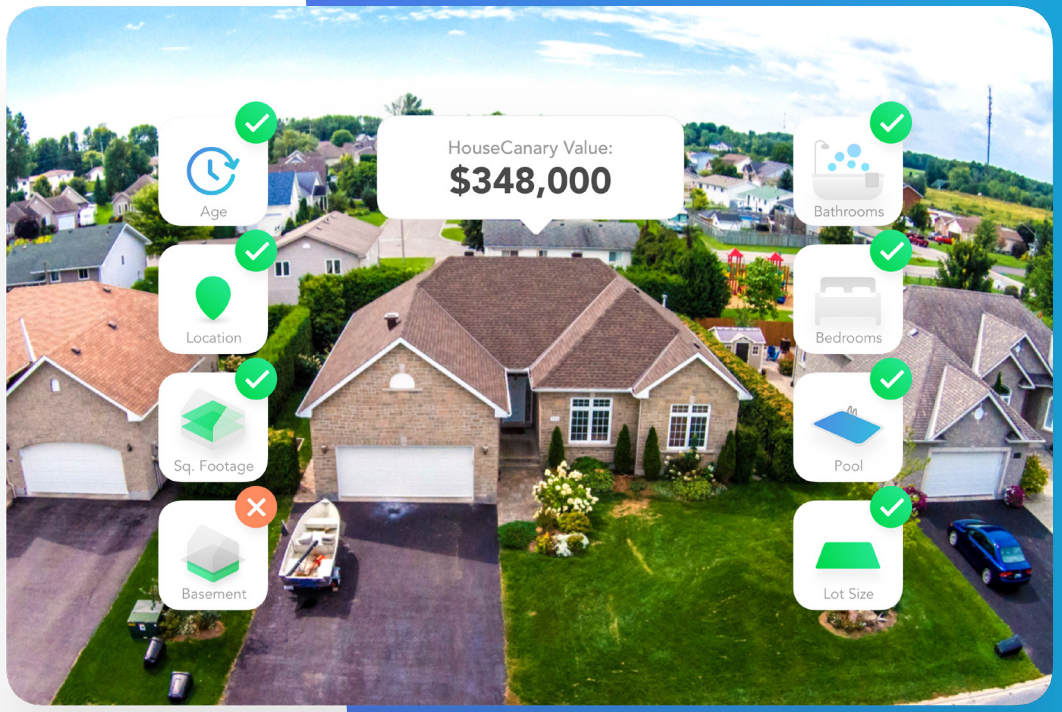
But with the emergence of new technologies such as artificial intelligence (AI), automated valuation models (AVMs) are becoming more precise than ever before. They marry existing information about a home with deep local market insights, then wrap in demographic and geographic data sets to form a comprehensive, sophisticated view of an individual home's value. The result is a valuation that's just as accurate as an appraiser's assessment and is backed by data.



What makes a home valuation accurate?

If a property valuation matches the actual sales price, you know that valuation was accurate. But what if the last sale was over a decade ago? What if the market has shifted dramatically, or the neighborhood has made a significant transformation? Or if there were particular issues to a given transaction that made the buyer or seller agree to less-than-favorable terms? Then what can you use as your benchmark for accuracy?

The “accuracy” of property valuation models is a surprisingly complex issue, with many perspectives and metrics. At HouseCanary, we believe that big data provides the best possible solution: by training our algorithms on decades of historical transactions for millions of residential properties, we are able to move ever closer to an objective valuation of the current fair-market value of any home, and an accurate prediction of the sales price.



How can you measure the accuracy of an AVM?

Companies that provide AVMs must have them regularly evaluated by an impartial third party in order to assess accuracy. There are several ways that these companies measure accuracy.

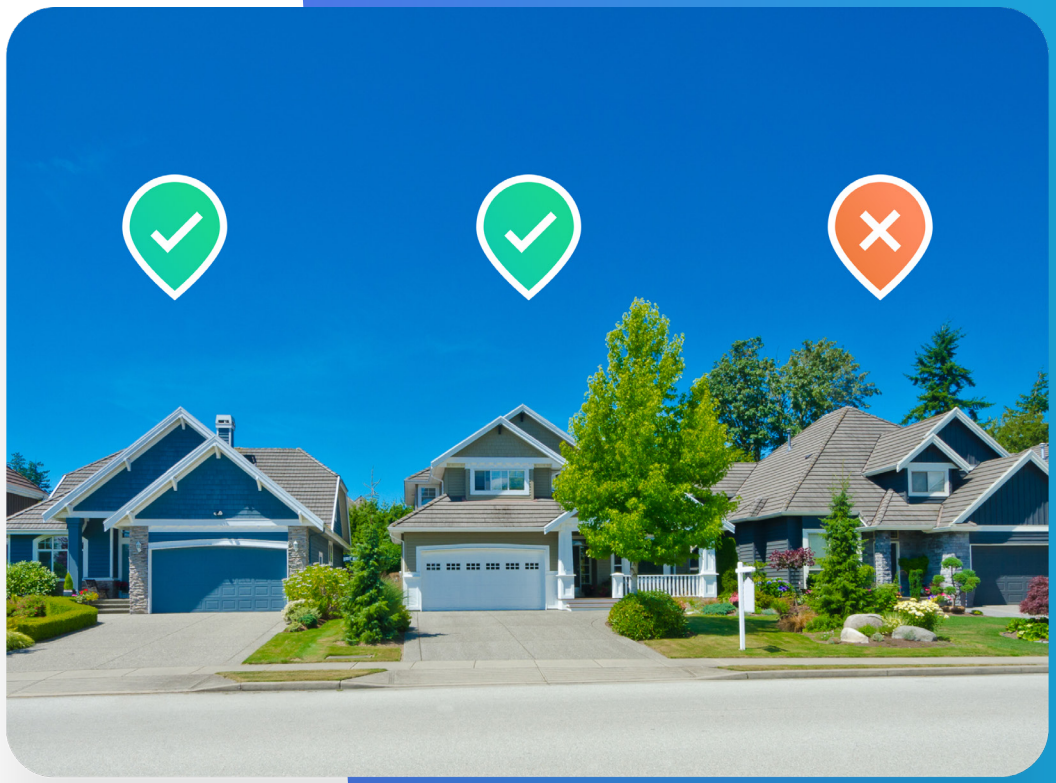
- **Median absolute percentage error (MdAPE)** is a standard measure of a valuation model's average deviation from observed property transaction values — the lower that number, the better.
- **Hit rate** indicates how often the AVM was able to locate a property in its database.
- **Record count** shows the number of properties for which an AVM can access data. Ideally, an AVM with a high record count should also have a high hit rate. HouseCanary self-reports its AVM record count, as should other vendors.
- **Mean error** averages all the valuation errors, both high and low estimates, as negative and positive integers. This is also known as the AVM's "bias," and it should be as close to 0 as possible.
- **Mean absolute error** is one of the most common measures of AVM accuracy, calculated by averaging all the absolute errors, typically on a percentage basis. This metric measures the overall accuracy of the AVM.
- **Accuracy rate** indicates how often an AVM is able to calculate value within 5%, 10%, 15%, and 20% of the home's actual value. Higher numbers at the 5% and 10% benchmarks indicate a more accurate AVM.
- **Error frequency distribution** indicates where an AVM's errors usually fall. A few high-error mistakes by an AVM can heavily skew means and averages; the error frequency distribution indicates how often these mistakes are made.

Why aren’t AVMs perfect, or perfectly consistent?

Even a human appraiser with decades of experience will occasionally make a valuation mistake; and AVMs, despite their advantages, have their own limitations.

One of those limitations can be the market itself: there aren’t always enough similar properties nearby that have recently transacted or listed, which makes finding comparable homes problematic. Or perhaps the home is an outlier in another way, such as a waterfront property in a landlocked state without very many bodies of water, or a high-end home in an area where most homes are entry-level properties. Buyers and sellers can affect a property’s value, too, by bringing their own incentives and biases to every home sale.

Technology offers one of the best solutions to this complex problem. Because HouseCanary trains its algorithms on a deep, broad pool of proprietary data — that includes a range of historical and current buyer and seller behavior — our AVM can come as close to perfect as any model. And constant iteration and improvement means it’s getting even better every day.

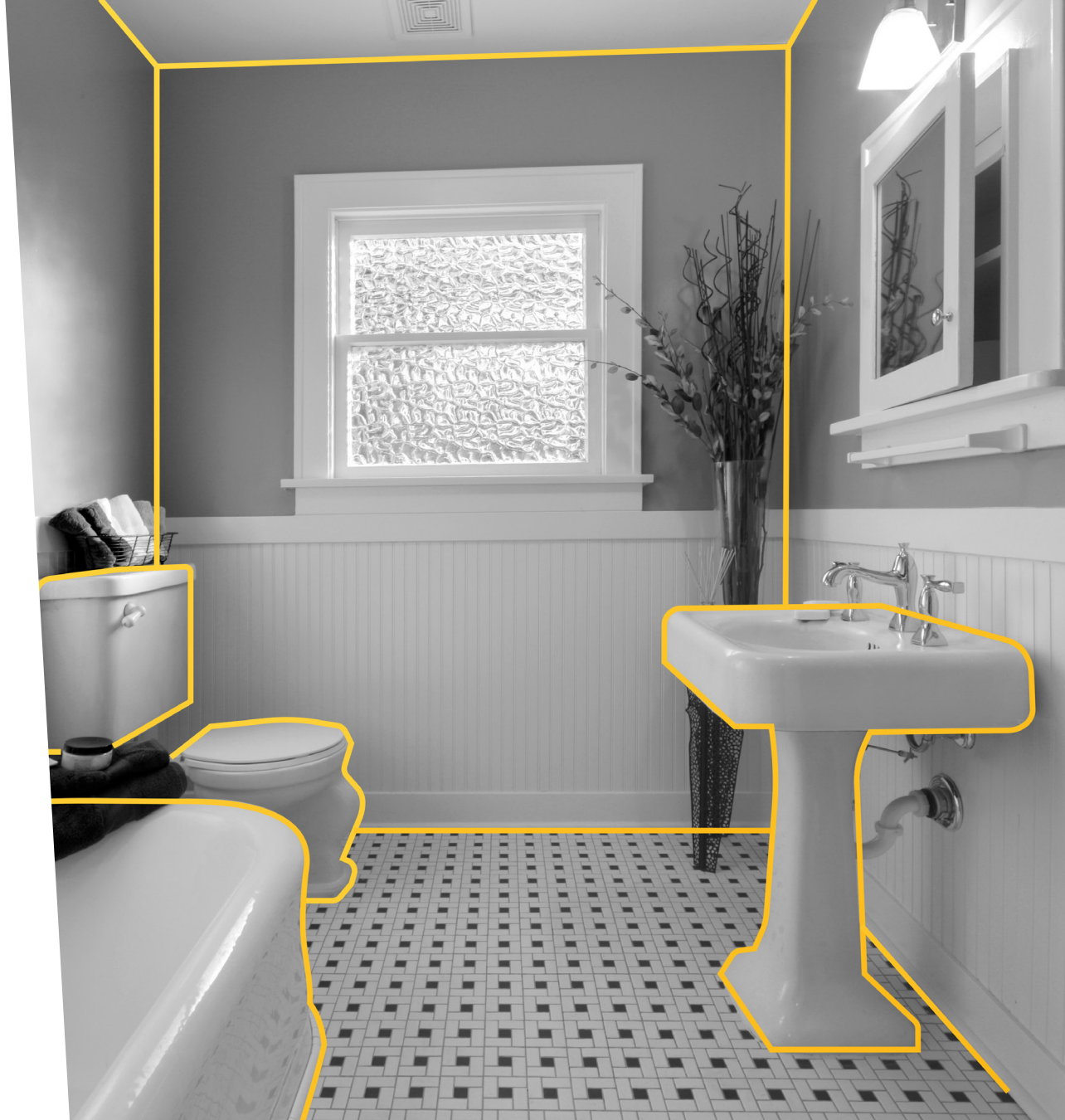


The advantages of an AVM

Despite the fact that they aren't always perfect, AVMs are nonetheless able to assess homes without the burden of human bias — and their accuracy is only getting better over time.

One advantage of an AVM is that machine learning can apply tools like regression modeling. This allows AVMs to quickly and consistently calculate exactly how much an extra bedroom or bathroom is worth on a particular block in a particular neighborhood, giving AVMs an edge over humans when it comes to pinpointing a home's value.

And emerging technology is making AVMs better and better. For example, new image recognition technology gives us the ability to create tools that can assess a home's condition, identify damage, pinpoint which materials were used in the kitchen countertops, and much more.



What does this mean for real estate?

Sometimes the nature of the property or the market will require buyers and sellers to seek out a human expert to help value a home, but as technology becomes increasingly reliable and refined, AVMs are able to accurately value a wider and wider range of properties. As technology continues to improve, the real estate industry will start reaping some of the benefits.

HouseCanary's regression modeling and image recognition technology are on the cutting edge of AVM innovation, and our accuracy measurements (such as hit rate and MDaPE) are among the best in the industry. Our talent, braintrust, and technology are unparalleled in the real estate industry, and by using machine learning and artificial intelligence, our AVM is making consistent and constant improvements every day, teaching itself to become more and more accurate.

About HouseCanary

Founded in 2013, valuation-focused real estate brokerage HouseCanary provides software and services to reshape the real estate marketplace. Financial institutions, collateral investors, lenders, mortgage investors, appraisal management companies, and consumers turn to HouseCanary for industry-leading valuations, forecasts, and transaction-supporting tools. These clients trust HouseCanary to fuel acquisition, portfolio management, underwriting, and more. Learn more at www.housecanary.com.

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