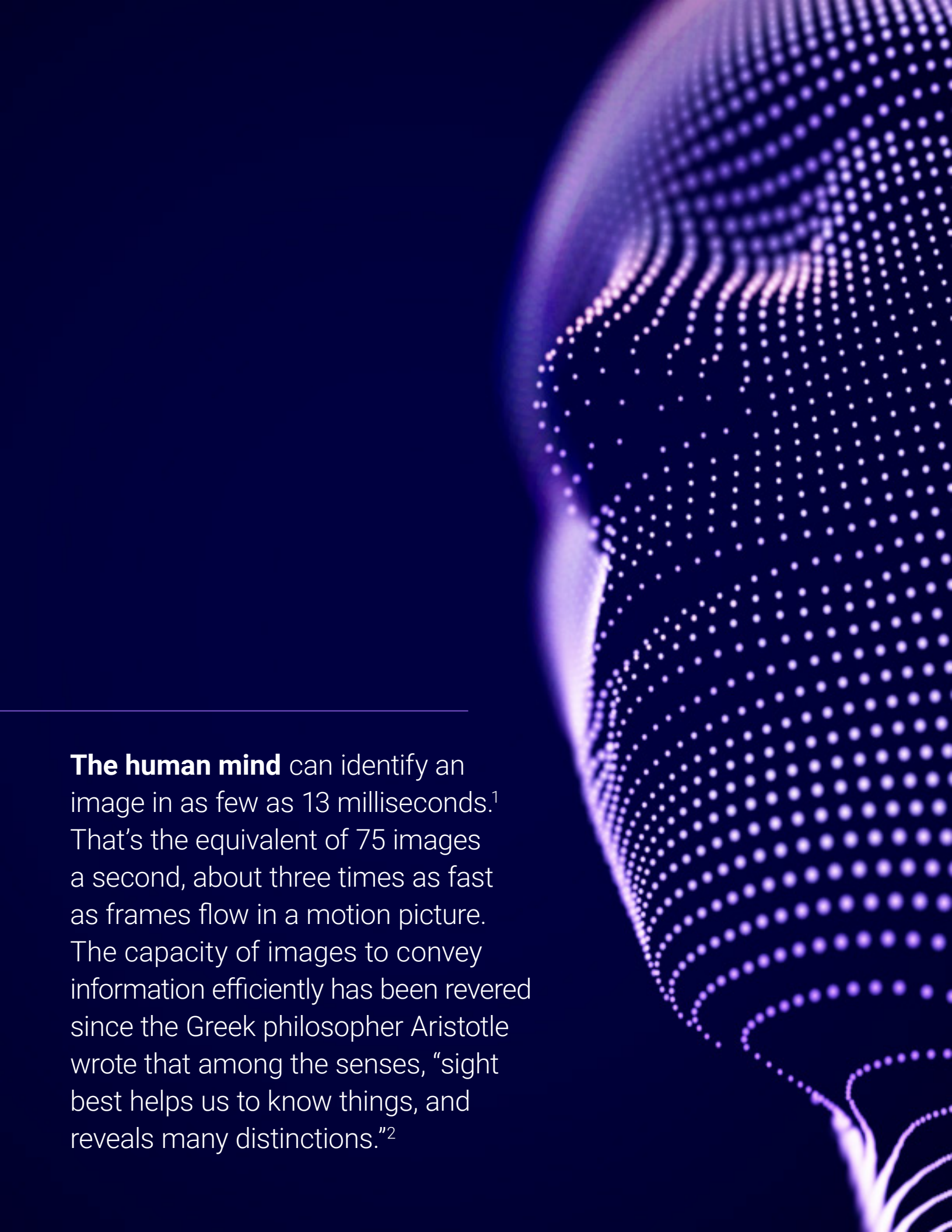
Verisk™

When every picture tells a story:

How image analytics is transforming data-driven underwriting for small commercial insurers



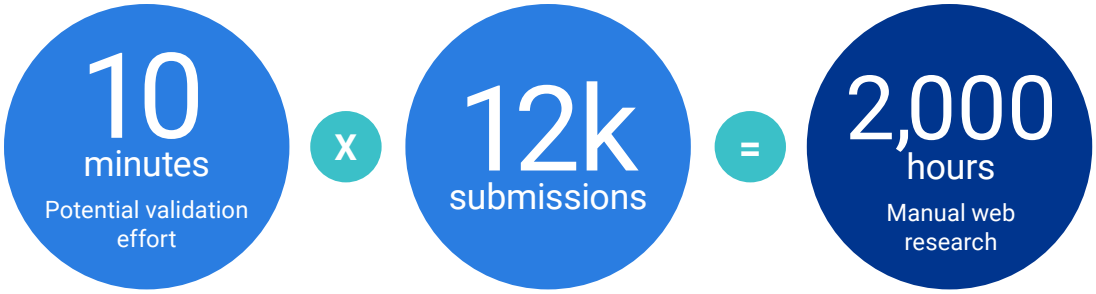
The human mind can identify an image in as few as 13 milliseconds.[1] That's the equivalent of 75 images a second, about three times as fast as frames flow in a motion picture. The capacity of images to convey information efficiently has been revered since the Greek philosopher Aristotle wrote that among the senses, "sight best helps us to know things, and reveals many distinctions."[2]

The ability to look at a picture and swiftly decipher its meaning has been a distinctly human talent—but computers are catching up. Leaps in machine learning and artificial intelligence (AI) make it possible to teach computers to see, analyze, and identify images like a human being. The opportunities for new applications in insurance underwriting are myriad as computer vision makes it feasible to analyze millions of images and rapidly extract meaningful and actionable data.

Too much time, too few results

Today, many underwriters manually search across websites and social media platforms to collect and verify data on their small business customers that identifies potential hazards and gives a sense of the true risk. For example, a carrier that processes 12,000 small business submissions in a year may have each underwriter spend, on average, 10 minutes per application browsing online.3 That adds up to 2,000 hours of manual research, or 50 weeks perusing their customers' websites and social media profiles to assess potential exposures. Assuming an average quote-to-bind ratio of 25 percent, most of this effort will likely not translate into booked premium.

Manual search takes time and effort



Moreover, time-consuming manual data collection and research has no guarantee of yielding the critical information necessary to properly assess exposure or reveal the potential misclassifications common in the small commercial marketplace. Small business activity can vary not just by industry and location but also by individual operation within a class. A firm classified broadly in one category may perform labor that involves different potential hazards. For example, a handyperson may take on occasional roof work, or a landscaper may sometimes trim trees. That intermittent activity is unlikely to be revealed in basic prefill data, but it's vital to know because activity such as scaling trees brings more potential exposure than cutting grass and may affect an insurer's workflow or triage decisions.

Businesses frequently evolve to offer new or different services and products. If they don't believe their core operations have changed, it might not occur to the business owners to volunteer that information in a policy application or at renewal time unless specifically asked, which can impact both sides of the transaction.

An insurer may not discover a customer is performing a potentially hazardous activity until a claim is filed—having missed the opportunity at the start to price the risk appropriately. And a small business customer could be vulnerable if a policy expressly excludes an activity they perform in their work, even occasionally. A Verisk analysis found that 52 percent of small business policies were misclassified by Standard Industrial Classification/ North American Industrial Classification System (SIC/NAICS) codes over five years, leading to an estimated $6.5 billion in lost premiums in the first year alone and $22.3 billion by the fourth year.[4]

Image Analytics Insights
- Attention to safety
- Use of heavy machinery

Image Analytics Model: Landscaper

Uncover Underwriting Insights
- The business provides landscaping services that may involve exposures that traditional data, including SIC/NAICS codes, doesn't capture.
- Image models can identify the use of heavy machinery, specifically a cherry picker truck in this example.
- Landscapers may perform a wide range of activities, and knowing which are included in a particular business's operations helps ensure the policy reflects a full picture of the risk. For example, underwriters must know whether employees wear personal protection equipment when using heavy equipment to trim trees, for example. The presence of safety gear may also be an indicator of the business's overall attention to safety. Image analytics models can confirm this business employs safety measures by having workers wearing protective equipment, which would inform insurers they are taking steps to reduce risk and may be eligible for potential premium discounts.
- Insurers can use the insights to recommend heavy equipment insurance that protects loaders, cranes, and other machinery often used in construction and other tasks.
- The insurer will be able to include up-to-date exposures in its underwriting, and the contractor will have adequate coverage should an incident affect its employees, equipment, or a third party.

Need for speed and accuracy drives push for new solutions

Missing or erroneous underwriting information—whether misclassification, missed exposures, or changes in business activity—can lead to claims that are higher than expected or related to exposures that were unknown at point of quote. But spending more time and effort on underwriting every application is not the answer. Mining through multiple data sources manually to gather facts is increasingly time-consuming as the volume of sources grows. These current processes are likely contributing to rising costs, where administering property/casualty policies in the United States has risen by more than 30 percent in the past decade.[5]

In the fast-growing yet price-sensitive small commercial insurance market, profitability means reducing touchpoints and streamlining the onboarding of new business. Both agents and business owners expect a speedy turnaround for quotes. That means insurers need access to robust underwriting data without requiring customers to fill in screen after screen or engage in a long string of back-and-forth questions.

The goal is eliminating most underwriting questions while still providing the critical information required to assess a risk. Image analytics plus deep insurance expertise can help make it possible. Incorporating image analytics into a robust mix of data can help shorten the underwriting process by enabling more automation, reducing the time spent on processing a policy from days to mere seconds, which could translate into more quotes issued and policies bound.

Image Analytics Insights
- Car wash operations
- Automatic tunnel conveyor
- Use of automatic brush

Image Analytics Model: Service Station

Uncover Underwriting Insights
- The business is a service station, but it also has a car wash on site.
- Image analytics indicate an automatic carwash at the station, which may not be found from other sources.
- Image models identify not just the presence of a car wash, but granular information on the type of car wash.
- An automatic conveyor may be installed to carry cars from the beginning to the endpoint of the tunnel. The facility may also use brushes to clean the cars' exterior automatically.
- For example, an automatic tunnel conveyor and brushes can signal the risk of higher equipment repair costs and friction issues that may not be priced into the policy.

Artificial intelligence sees the data hidden in plain sight

Emerging image analytics technology can help streamline and automate underwriting by giving a more comprehensive picture of a risk—in seconds rather than days. Using high-quality data and analytics at the start allows skilled underwriting resources and time to be employed more strategically to pursue opportunities in the fast-growing small commercial market instead of finding, researching, and verifying facts.

Images displayed on websites and social media can be a rich source of information about a business. They can include candid photos of the business in action, detailed depictions of business locations, snapshots uploaded by customers, and other images that can reveal a wide array of activities and possible exposures.

Advanced machine-learning models can turn content extracted from images into meaningful and practical underwriting insights. The key is training the computer models to "see" images with an underwriter's eye. While computer vision has the power to extract abundant information from an image, separating meaningless trivia from potential exposure-impacting details is the difference between adding to the noise and providing actionable insights.

When analyzing a photo of a restaurant dining room, for example, identifying wooden tables and chairs or a TV over the bar may be irrelevant. By contrast, revealing a dance floor with a DJ—an activity that can affect the insured's classification and the insurer's decision on how to segment this risk—can be vital information. Image analytics can also reveal that a business advertised as a "family brewery" sells high-alcohol-by-volume beers, welcomes animals, and does not serve food. Insurers may want to assess the exposure each of those characteristics represents, in addition to understanding other property and business attributes that drive premiums, claims, and coverage.

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The more effective models are built with a targeted approach that sets out to answer the real-world questions underwriters examine on insurance applications by identifying potential exposures and providing other critical insights for risk selection and pricing. For example, detecting contractors working on elevated surfaces—such as inside a cherry picker or on a scaffold—may inform insurers of possible exposures associated with the contractor's operations. Indicators that reflect a business's proactive measures to reduce the likelihood of an avoidable claim, such as requiring workers to wear safety gear, can help insurers identify, acquire, and retain best-in-class businesses and reward them with reduced premiums.

Image analytics AI models can sometimes even outperform humans in detecting insurance-impacting details, especially in cases where the object of interest is small or hidden. For example, AI may not only spot a bar in the background of a family restaurant more quickly than a person, but also pick out alcohol bottles on a table that some underwriters might miss.

And while humans can only interpret images one by one, machine learning can automate this process to analyze multiple risks simultaneously.

Image Analytics Insights
- Bar operations
- Liquor liability
- Music venue risk

Image Analytics Model: Restaurant

Uncover Underwriting Insights
- In this example, traditional data sources categorize the business as a restaurant, but this is just part of the story.
- From social media images, models can detect that the business sells alcoholic drinks, has a bar on premises, and holds live performances.
- Without the insights extracted from the images, insurers may not know the complete risk profile.
- The insights may lead an insurer to see whether the restaurant has a liquor license and how often it holds live performances. If needed, the insurer will be able to provide appropriate coverage for liquor and event-related exposures.

Data and insurance expertise combine to power image analytics

Image analytics, though, is not enough to transform small commercial underwriting. To truly be effective, it needs to be combined with robust data in the insurer's workflow. With an application programming interface (API), relevant firmographic data and risk assessment insights derived from image analytics can be delivered to the insurer with just a business name and address. The insurer can then use these insights to quickly underwrite risks with greater precision and significantly improve customer and agent experiences. While only advanced analytics can interpret these images and automate the application process, customers will be able to easily see the benefits: fewer questions on insurance applications, shorter times to quote, and greater confidence that they have the coverage they need. It's a beautiful picture. And with the right tools and systems in place, it can become a reality.

How Verisk can help

Streamlining the underwriting process requires confidence in the quality of the data you rely on to make decisions. Using a data provider with broad insurance industry expertise can translate into a nuanced understanding of the insights generated by image analytics. Verisk data scientists continually test and develop models to ensure the level of reliability needed to provide actionable underwriting insights that can help you sustainably grow your portfolio and boost profitability.

Integrated directly into LightSpeed™ Small Commercial, image analytics paired with other robust data sources can provide insurers with a holistic underwriting solution that helps refine risk assessment and improve customer and agent experiences.

Notes

1. Anne Trafton, “In the blink of an eye: MIT neuroscientists find the brain can identify images seen for as little as 13 milliseconds,” MIT News, January 16, 2014, https://news.mit.edu/2014/in-the-blink-of-an-eye-0116, accessed on October 9, 2021.
2. Aristotle, “Metaphysics,” translated by Hugh Tredennick, “Aristotle in 23 Volumes,” Harvard University Press, 1933, 1989, http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.01.0052, accessed on October 12, 2021.
3. Verisk client experience.
4. Insurance Information Institute, III: Small Businesses Have Big Insurance Needs, May 6, 2019, https://www.iii.org/press-release/iii-small-businesses-have-big-insurance-needs-050619, accessed on October 8, 2020.
5. Sylvain Johansson, Andy Luo, Erwann Michel-Kerjan, and Leda Zaharieva, McKinsey State of Property and Casualty Insurance 2020, https://www.mckinsey.com/industries/financial-services/our-insights/state-of-property-and-casualty-insurance-2020, accessed on October 13, 2201.

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