zesty AI

From Self-Reported to Verified: Roof Age Accuracy That Pays Off

Accurate, verified roof age delivered better pricing, smarter underwriting, and lower losses

The Challenge

A National Carrier's Blind Spot: Roof Age

This carrier, with a strong presence in the Midwest and Mid-Atlantic with over $500M in DWP, faced a fundamental issue: they didn't know the true age of the roofs they insured.

- **Self-reported and agent estimates were unreliable:** Policyholders often guessed, and agents lacked visibility into actual replacement history.
- **Inspections were rare and inconsistent:** Only a small fraction of properties could be inspected each year, and the criteria varied by inspector.
- **Pricing suffered on both ends:** Risky properties slipped in underpriced, while safe properties were overpriced or turned away.
- **Eligibility decisions were misaligned:** with roof age tied directly to underwriting guidelines and schedule modifications, such as mandatory ACV after a certain age, inaccurate data meant policies were misclassified and placed with the wrong terms.

2004-01-01

2005-12-05

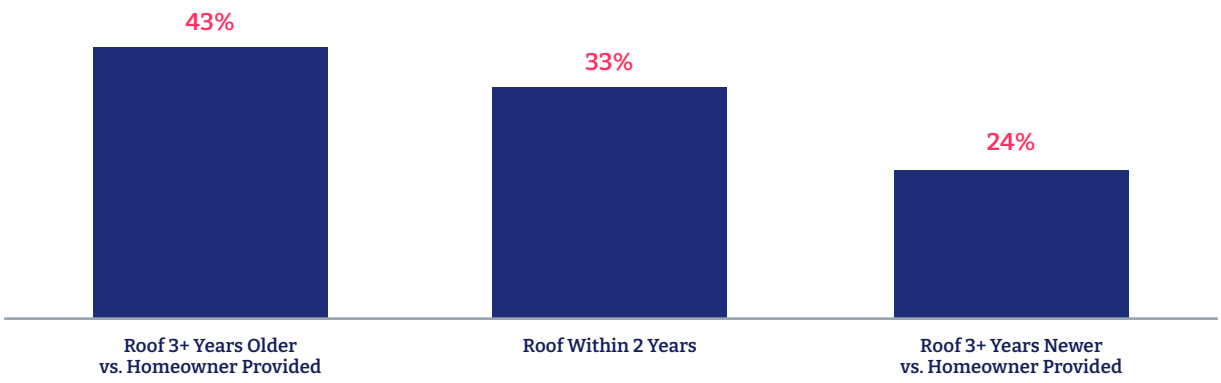
Roof Age: **21 Years**
Agent-Provided Roof Age: **5 Years**
Method: **Confirmed by Imagery**
Confidence Level: **Very High**
Location: **BALTIMORE, MD**

Industry Insight

ZestyAI's research shows that 67% of self-reported roof ages are wrong **(Figure 1)**:

- **43% underestimated** (roofs older and riskier than reported)
- **24% overestimated** (roofs newer and safer than reported)

Figure 1: Homeowner-Provided Roof Age vs. ZestyAI Roof Age



Separately, analysis using **ZORRO Discover™**, ZestyAI's agentic AI research assistant for market intelligence, found that **78% of carriers in the Midwest, Great Plains, and Southeast use age-based triggers for ACV roof endorsements**, with some beginning as early as **8 years old**.

Together, these findings show that inaccurate roof age doesn't just distort pricing. It also drives misclassification under eligibility guidelines and coverage terms, creating risk across the insurance lifecycle.

For this carrier and many like it, the result was clear: underpriced bad risks, overpriced good ones, and underwriting decisions built on shaky data.

The ZestyAI Approach

ZestyAI Roof Age analyzes building permits, 20+ years of aerial imagery, and regional climatology through advanced machine learning to deliver verified roof age assessments with transparent confidence scores.

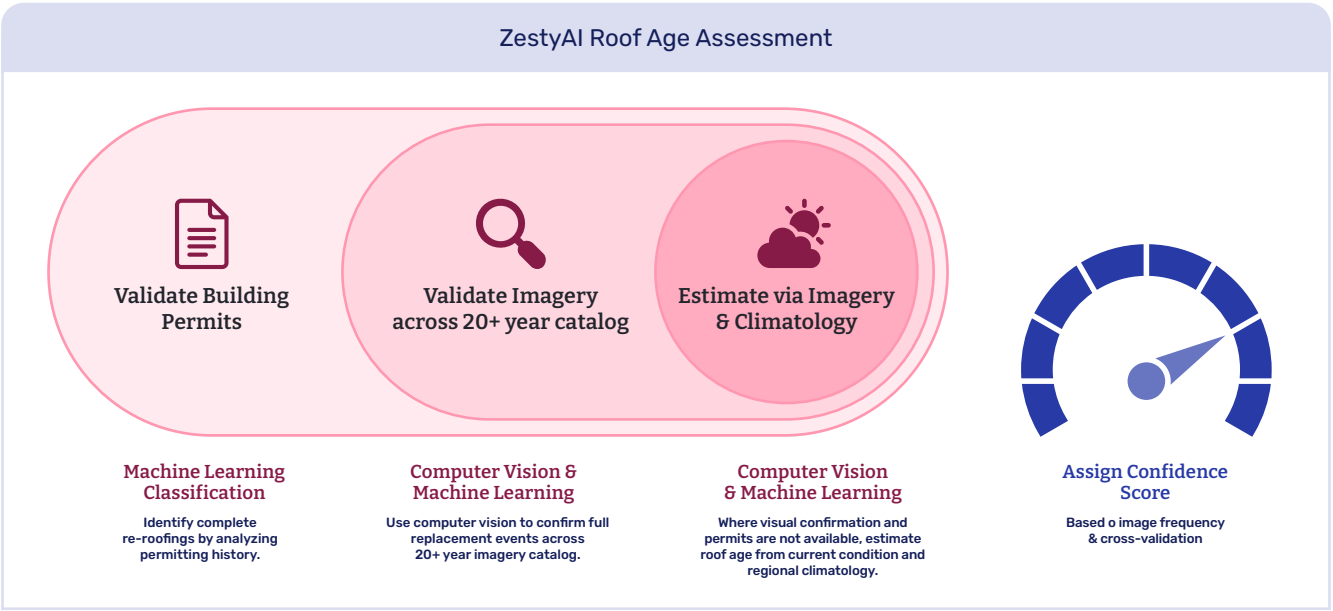
Anchored in the Property Timeline

The model starts with the property's construction year and moves forward through building permits and 20+ years of aerial imagery. This prevents false positives (like confusing the original roof for a newer one) and ensures replacement events are identified with confidence.

Trust but verify

Every prediction comes with a confidence score, so carriers know not only the roof's age but how much to rely on the result.

- **High confidence:** fast-track for automation.
- **Low confidence:** route for inspection or review.



Built to Handle Uncertainty

When direct replacement signals aren't available, the model switches to estimation mode. It factors in property-level attributes and regional climatology, understanding, for example, that roofs in the humid Southeast age differently than those in the snowy Midwest.

Minimum roof age, maximum clarity

With two decades of imagery, ZestyAI can pinpoint the earliest visual evidence of the current roof. If no replacement is detected, the model sets a minimum roof age that underwriters and actuaries can trust.

Transparent, Explainable Predictions

By blending multiple data sources into a single output — always paired with a confidence score — Roof Age gives carriers a **clear, auditable, and actionable signal** for pricing, risk selection, and inspection prioritization.

Case Study

For this nationwide carrier, relying on self-reported or agent-estimated roof age left major blind spots. With ZestyAI, the picture changed. By combining aerial imagery with property records, the model pinpointed the exact timing of roof replacements and revealed just how far off reported ages could be.

The examples below, drawn directly from this carrier's portfolio, show before-and-after aerial imagery of roof replacements. Each includes what the carrier believed the roof age to be versus the actual age detected by ZestyAI.

Case Study: Residential Building

Roof Age: **10 Years**
Agent-Provided Roof Age: **8 Years**
Method: **Confirmed by Imagery**
Confidence Level: **Very High**
Location: **DENVER, CO**

Case Study: Commercial Building

Roof Age: **4 Years**
Agent-Provided Roof Age: **2 Years**
Method: **Confirmed by Imagery**
Confidence Level: **Very High**
Location: **KIRKLAND, WA**

Case Study: Building Permit
2021-03-10

Type: *Building – single-family*
Class: *Re-roof only. Buchman-A (single-family residential re-roof replacement — roofing and sheathing). The project involves installing new asphalt shingles; roof rafters or trusses spaced 24 inches on center or less; plywood or OSB 7/16 inch or greater; and deck insulation replaced with equal or better R-value. The work includes replacing or altering existing asphalt shingles, and replacing roofing and sheathing with a weight of 3 psf or less. There is no increase in building height. (Single-family dwelling)*

Impact

The Results: A 1.71% Reduction in Combined Ratio

By integrating ZestyAI Roof Age into underwriting and pricing workflows, this nationwide carrier achieved a **1.71% reduction in combined ratio (Figure 2)** . The savings came from three key levers:

- **Loss Cost Controls:** Enabled appropriate use of deductibles and ACV endorsements, lowering claims severity.
- **Better Risk Selection:** Screened and priced new business more accurately, attracting low-risk properties and deterring high-risk ones.
- **Inspection Optimization:** Guided inspections toward properties that truly needed them, cutting wasted expense.

Together, these improvements drove measurable financial impact across the book, demonstrating how a single data point, when made accurate, can deliver outsized value across the insurance lifecycle.

Case Study: Estimated Roof Age: 10 years

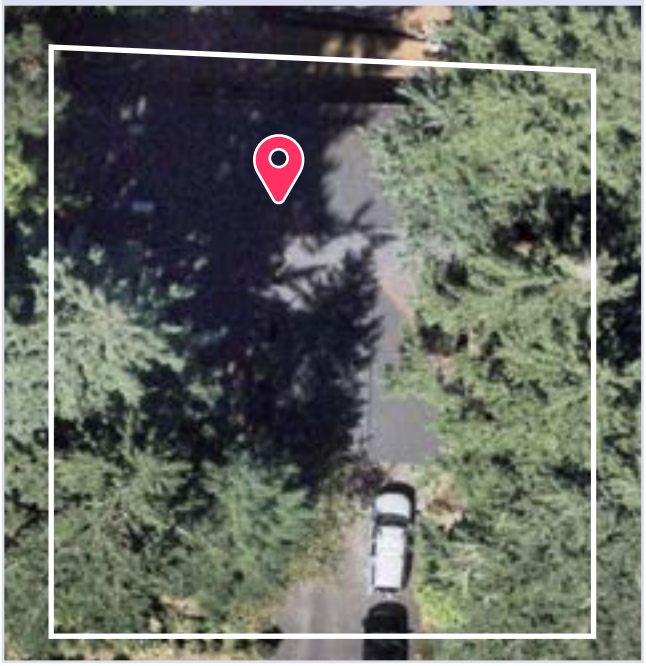
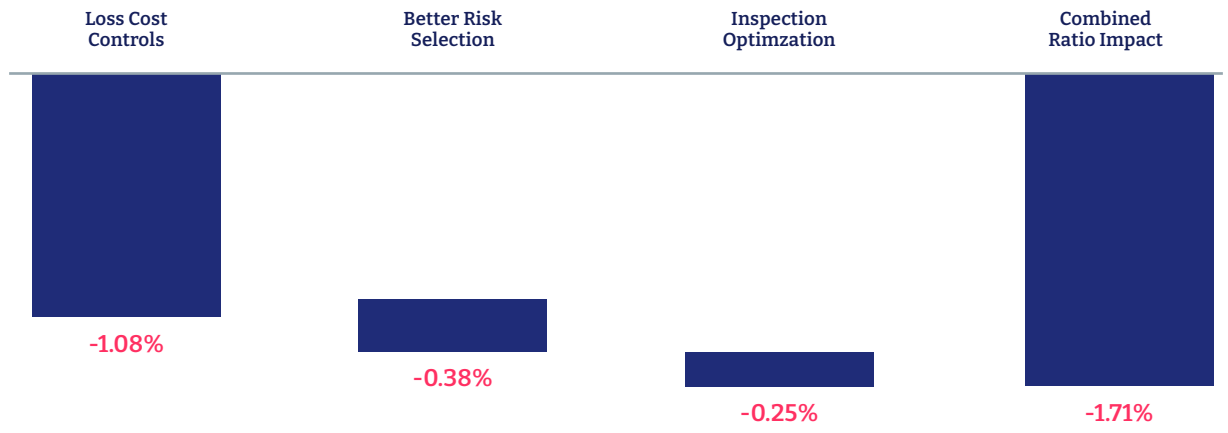


Figure 2: Combined Ratio Impact of ZestyAI Roof Age



What's Next

After proving the value of accurate roof age, this carrier has seen firsthand the impact of better enterprise data quality. Having reliable roof age in it's system is delivering benefits across product development, actuarial analysis, underwriting, and claims.

The next step is expanding that foundation. By incorporating additional property attributes such as roof complexity and quality, parcel features, and more, the carrier expects to unlock similar gains across the entire insurance lifecycle, from new business quoting and renewals to underwriting decisions and even reinsurance negotiations.

To achieve this, the carrier is moving to adopt **Z-PROPERTY™**, ZestyAI's platform for property intelligence, to standardize and elevate data quality at scale.

ZestyAI is the Decision Intelligence Platform for the insurance industry.
Trusted by Property and Casualty carriers and regulators across the United States, ZestyAI helps insurers make better decisions faster and with greater confidence.

The platform unifies property-level data, predictive AI models, and Agentic AI automation to transform how insurers see, price, and manage risk. Through machine learning, computer vision, and regulatory-grade transparency, ZestyAI delivers precision and performance across underwriting, rating, reinsurance, and regulatory workflows.

Validated by climate science and historical loss data, ZestyAI's models cover major perils including wildfire, severe convective storm, and non-weather water. From improving pricing accuracy to strengthening reinsurance outcomes, ZestyAI brings trusted AI to every insurance decision—helping the industry operate with speed, accuracy, and resilience.

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