

## Willis Towers Watson



Structure Insurance Score (SIS) is a product developed through an alliance between Willis Towers Watson and e2Value that captures unique characteristics that property insurers use to determine replacement cost.

In the not-so-distant past, traditional rating methods for homeowners coverage, and incremental changes made to them (such as adopting by-peril rating plans), allowed carriers to assess potential risks associated with the policies they write and maintain acceptable risk appetites. Acceptable returns led to few deviations in the broad market approach.

But, as the housing market continues to change, some carriers are recognizing that traditional rating characteristics, although still useful, typically don't go far enough to offer an accurate assessment of a home's risks. Many homes now have larger square footage and more valuables in them. The popularity of internal remodeling and refurbishment projects has also affected risk. Not only are houses larger and more intrinsically different, but in a heated housing market, their values may also have significantly appreciated, typically at varying rates.

Another major change is the advent of the IoT, which creates an internet-connected environment that can either minimize or increase risk depending on how a home is connected. The use of basic home characteristics to determine replacement cost may therefore not sufficiently reflect the risk of replacing a destroyed or damaged home and its contents.

Consequently, the stakes seem set to rise for homeowners' insurers. Over time, failure to accurately understand and capture a property's risks is likely to result in more inaccurate underwriting and pricing. It could also lead to potentially large claims that whittle away at profits and impede the ability of companies that fall behind to deliver a competitive return in an environment where margins are tight. Several large insurers with sizable data pools and the ability to draw talent are already differentiating themselves in the market by updating their techniques.

New products and services, however, are being developed that make it possible for small and midsize insurers to maximize the data culled from predictive modeling to improve the accuracy of underwriting and pricing. In fact, now all insurers can benefit

from analytics that bring property assessment to the next level and make their business more financially robust. An example of how the playing field is being leveled is Structure Insurance Score (SIS), a product developed through an alliance between Willis Towers Watson and e2Value, Inc. The product was developed using a combination of Willis Towers Watson's Emblem predictive modeling and Radar software; data used by e2Value in its unique, patented approach to valuation of structures; and data provided by a pilot group of U.S. insurers.

Participating insurers provided historical exposure and claim data that was pooled to create a large, reliable data source of homes across the U.S. Willis Towers Watson's Emblem and Radar software was used to control for the effect of traditional rating factors so that the e2Value data could be used to build a score that is truly predictive above and beyond traditional ratemaking models.

It works by assigning a home risk score based on criteria that differs from traditional building characteristics such as construction type, amount of insurance (AOI) and rating territory. (The AOI and score are not correlated.) SIS takes a more detailed look at how vulnerable a dwelling is to typical perils and the characteristics needed to determine replacement cost by looking at over 150 fields of information. So, for instance, characteristics such as the number of bathrooms, number of stories and the age of the roof might be incorporated into an analysis to assess insurance risk more accurately.

- The insurer provides the street address for a given risk via application programming interface, which is passed on to e2Value.
- Property characteristics associated with the address are passed on to Willis Towers Watson's Radar Live platform, and a score is calculated in Radar Base.
- The resulting score is passed back to the insurer.

The use of additional property characteristics is valuable because variables like these can be hard to collect. If the insured doesn't

tie this information to a benefit such as a discount, it may not be accurately reported. For example, if a discount depends on installing fire alarm, the inclination is to be very specific about the type of was installed so the homeowner’s get the biggest discount. But without a detailed home inspection, it may not be easy to determine other specific information such as the number of entrances in a home or the age of its plumbing.

The impact of this more detailed data varies by geography and peril mix. So, for instance, an exact duplicate of a home in the U.S. Midwest could have a different peril profile than if it is in Southern California. SIS improves underwriting for company/ tier placement and renewal decisions by better evaluating risk for apparently comparable properties. It improves pricing through increased segmentation, greater pricing accuracy and more effectively tying loss costs to premiums charged. The first-generation SIS was developed using a GLM and is focused on residential property exposure.

Eventually, scores will be developed using other techniques, such as gradient boosting machines, and for farms and commercial properties.

A detailed analysis of a home’s attributes can make a noticeable difference in premium. The table illustrates this variation for two homes in the same neighborhood. Although outwardly different in appearance and perhaps slightly different in scale, the nature of the factors that have been commonly used to price homeowner’s insurance means the premium charged would be the same for both properties. With the addition of detailed structural characteristics to the risk assessment process through the information and analysis available from SIS, a more accurate appraisal of the risk of covering each home results in a 50% premium differential between the two using property 1 as a starting point.

### How SIS improves appraisal of insurance risk

	 Property 1	 Property 2
Age of home	14 years	14 years
Replacement cost	\$340,000	\$340,000
Protection class	6	6
Premium (traditional rating)	\$1,000	\$1,000
Structure Insurance Score	580	905
Structure Insurance Score premium	\$1,200	\$800

