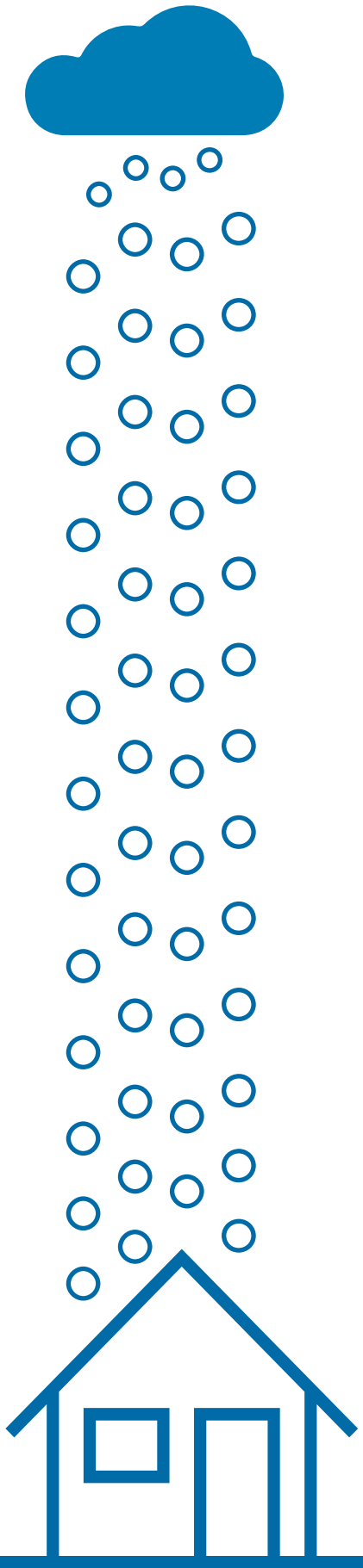
Hail: The Hidden Risk

An analysis of property exposure to damaging hail in 2017

Verisk



Summary

Hail is a difficult risk to insure because it's:

- **hidden from property owners:** Hail damage often isn't obvious, and many property owners don't file a claim until months or years after a hailstorm.
- **volatile over time:** The frequency and severity of hail varies significantly, making it extremely difficult to predict future loss.
- **expanding its reach:** Hailstorms in the United States are no longer just striking buildings in Hail Alley, a region where the states of Colorado, Nebraska, and Wyoming meet. Significant storms are also affecting other areas, including states in the West and Northeast.

In this report, we examine these trends with an analysis of properties damaged by hail[1] in the past five years. We'll discuss why hail damage is often hidden from property owners, what makes hailstorms so hard to predict, and some of the factors that may be affecting the spread of hailstorms outside of Hail Alley.

We'll also share some ways that insurers can make more informed decisions about hail when underwriting properties.

More than **10.7 million** U.S. properties were affected by one or more damaging hail events in 2017, according to Verisk estimates.

[1]Verisk considers hail to be damaging when the hailstones are greater than 1 inch in diameter.

A hidden risk: Years can pass between hailstorms and claims activity

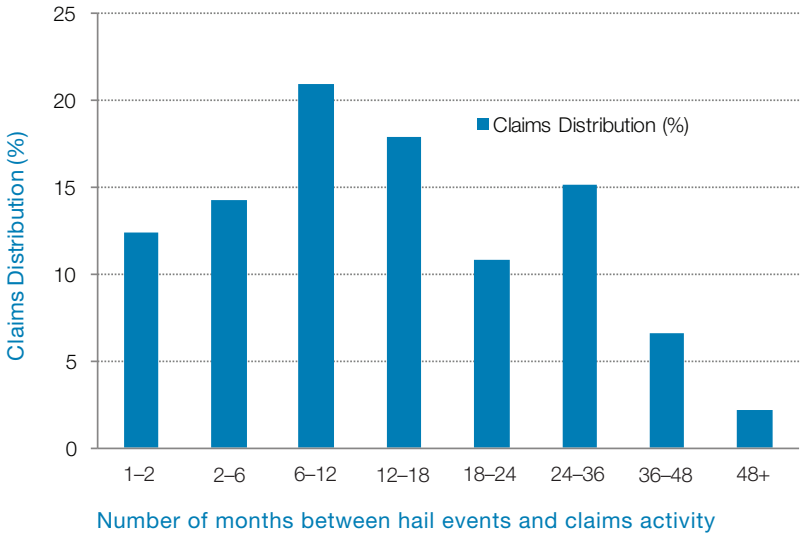
Verisk research shows that about 30 percent of hail claims have an erroneous date of loss—inconsistency between the reported date of loss and the actual date the property was damaged by hail. About half of such hail claims were made 12 months or more after a hailstorm passed over the property.

Why such a long time between the storm and the reported damage? First, hail damage frequently occurs on the roof, a part of the structure that property owners don't often inspect. The damage can remain hidden from view until the owners notice a leak and have their roof examined by a professional.

That damage can also vary significantly based on the age and material of the roof. While a newer roof with the right materials might survive a storm unscathed, an older roof or a roof with comparatively inferior materials could weaken significantly over months or years. Property owners and insurers alike may be unaware of the roof's age and type and its susceptibility to hail damage.

Verisk estimates **1 in 3 claims** has an erroneous date of loss

Hail claim months after storm



Source: A-PLUS™ and LOCATION®

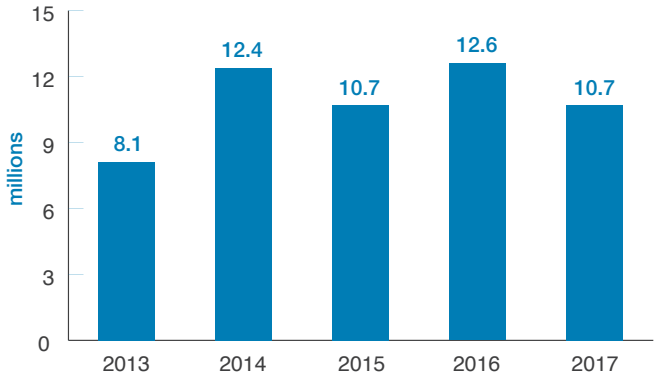
Methodology

To create this report, we tracked and analyzed every instance of damaging hail of at least 1 inch in diameter at properties in the continental United States between 2011–2017. We used our LOCATION Hail Damage Score™, which has information on damaging hail exposure on U.S. properties.

Hail volatility: The number of damaging hail events can vary significantly by year

The frequency of damaging hail events can vary significantly by year, making it challenging to insure properties accurately. The chart below tracks properties in the United States that have been affected by damaging hail in the past five years.

Estimated number of U.S. properties affected by one or more hail events



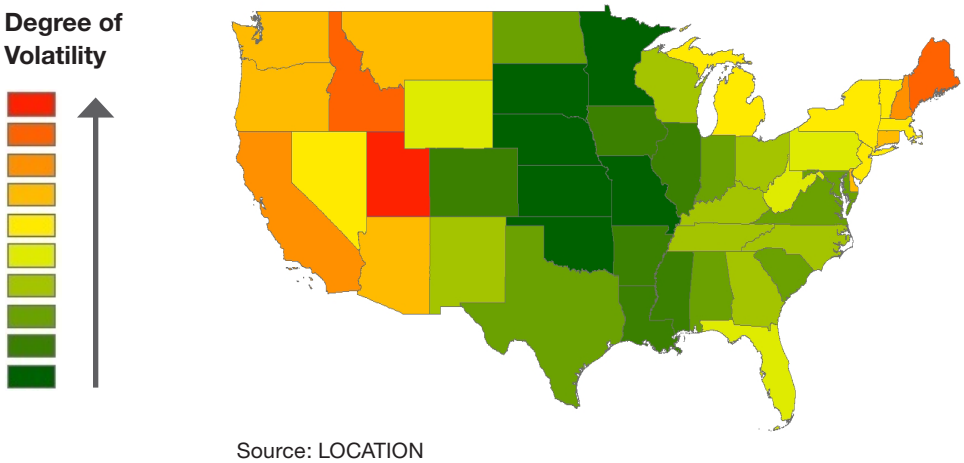
Source: LOCATION

Expanding its reach: Damaging hail extends beyond Hail Alley

Hailstorm patterns have also changed over the past few years. Traditionally, hailstorms in the United States were most common in Hail Alley, a region where the states of Colorado, Nebraska, and Wyoming meet. Parts of that region average between seven and nine hail days a year, according to NOAA's National Severe Storms Laboratory. However, Verisk data shows significant incidents of hail in states outside of Hail Alley. This is depicted in the map below, where states experiencing high volatility in exposure to one or more damaging hail events are most prominent outside Hail Alley, particularly in the West and Northeast.

Areas of volatility in hail activity

Year-to- year volatility in exposure to one or more damaging hail events during 2011–2017



Source: LOCATION

Top ten hail states in 2017

The chart below lists the top ten states for damaging hail events in 2017. It details the number of and percentage of properties estimated to have been affected by damaging hail in each state.

It provides perspective on states' varying proportion of property exposure to damaging hail. For example, Texas may have the greatest number of properties estimated to have been affected by damaging hail, but the number affected only represents approximately 18 percent of properties in that state. Kansas had an estimated 513,941 properties damaged by hail in 2017, which amounted to about 57 percent of the properties in the state.

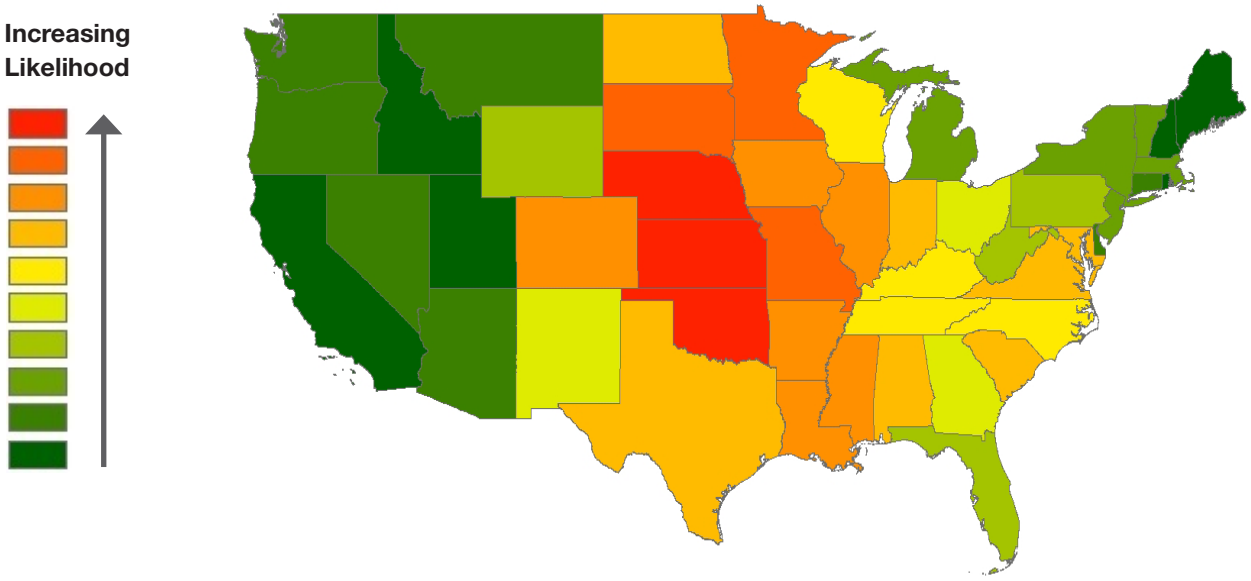
Number and percentage of properties that experienced one or more damaging hail events in 2017

Rank	State	Estimated number of properties affected	Percentage of properties affected
1	Texas	1,349,374	18%
2	Illinois	872,087	24%
3	Missouri	832,525	46%
4	Minnesota	737,375	44%
5	Oklahoma	644,803	55%
6	Kansas	513,941	57%
7	Indiana	456,215	18%
8	Virginia	400,529	16%
9	North Carolina	400,248	10%
10	Colorado	374,435	22%

Where are properties most exposed to damaging hail?

Given that claims activity tends to lag actual hail events by a few months to several years, timely information on historical hail exposure can help prevent binding properties with the potential for preexisting damage and avoid underwriting another insurer's claims.

Likelihood of actual exposure to one or more damaging hail events during 2017



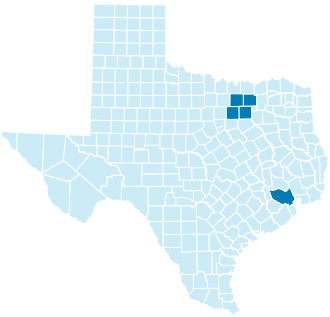
Source: LOCATION

Hail Damage: Top five counties

The charts below highlight the top five counties that experienced at least one damaging hail event in 2017 in each of the top ten hail states.

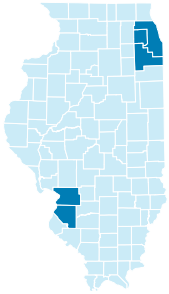
Texas

County	Estimated number of properties affected	Percentage of properties affected
Denton	140,750	68%
Collin	137,222	55%
Dallas	100,215	15%
Harris	78,248	7%
Tarrant	70,963	12%



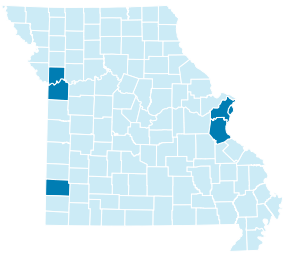
Illinois

County	Estimated number of properties affected	Percentage of properties affected
Cook	244,998	18%
Will	95,575	43%
Madison	76,287	69%
St. Clair	63,611	56%
DuPage	56,531	22%



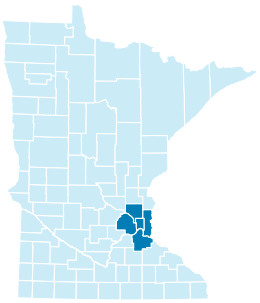
Missouri

County	Estimated number of properties affected	Percentage of properties affected
St. Louis	315,623	61%
Jackson	159,077	58%
Clay	68,204	83%
Jefferson	61,248	78%
Jasper	41,219	94%



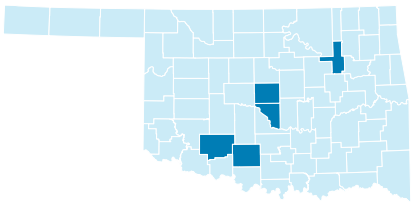
Minnesota

County	Estimated number of properties affected	Percentage of properties affected
Hennepin	251,217	70%
Ramsey	111,401	76%
Anoka	73,100	66%
Dakota	63,990	50%
Washington	52,289	63%



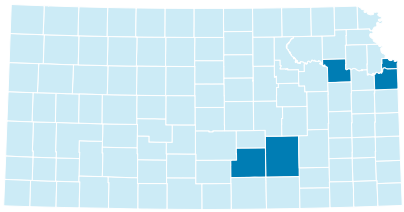
Oklahoma

County	Estimated number of properties affected	Percentage of properties affected
Oklahoma	156,226	59%
Tulsa	124,011	56%
Cleveland	64,173	70%
Comanche	37,868	100%
Stephens	14,531	97%



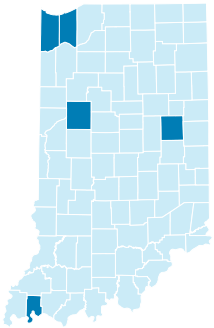
Kansas

County	Estimated number of properties affected	Percentage of properties affected
Johnson	127,632	62%
Sedgwick	93,060	52%
Wyandotte	65,285	95%
Shawnee	28,468	44%
Butler	20,293	80%



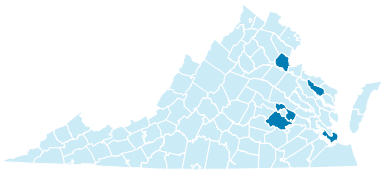
Indiana

County	Estimated number of properties affected	Percentage of properties affected
Lake	62,107	27%
Delaware	24,918	51%
Tippecanoe	21,389	42%
Vanderburgh	20,291	27%
Porter	18,797	33%



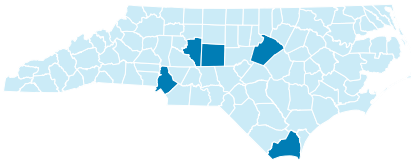
Virginia

County	Estimated number of properties affected	Percentage of properties affected
Richmond	64,349	76%
Henrico	61,025	54%
Chesterfield	49,774	40%
Stafford	32,858	75%
Newport News	21,710	43%



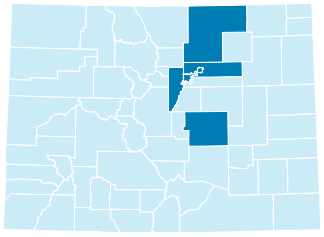
North Carolina

County	Estimated number of properties affected	Percentage of properties affected
Mecklenburg	90,859	26%
Brunswick	52,502	57%
Randolph	27,300	46%
Davidson	26,069	41%
Wake	21,333	7%



Colorado

County	Estimated number of properties affected	Percentage of properties affected
Jefferson	118,138	60%
Denver	85,668	50%
Adams	58,204	47%
Weld	32,430	38%
El Paso	26,653	13%



Addressing hail risk

While hail patterns are changing and damages leading to claims can often take time to appear, there is data that insurers can use to help them manage hail risk more effectively. Verisk's proprietary hail history data can help uncover properties that may be more susceptible to a roof loss. To offer the ability to reduce adverse selection and to stay ahead of the competition, insurers are using this hail data in conjunction with Verisk's Roof Age to segment risk beyond a property's age. These insurers will have the potential to see what others can't: that two properties could be the same age, but one has a roof that was severely damaged from a hailstorm last year.

Verisk tools can also help insurers predict future hail risk and make more informed underwriting decisions. If two properties were built around the same time and have roofs of the same age, Verisk's Hail Damage Score can help insurers differentiate the risk each presents. Verisk's Hail Risk Score gives a measure of short- to medium-term hail risk to help identify areas of emerging hail risk based on recent hail activity.

For more information, visit www.verisk.com/insurance/hail.

Authors

Arindam Samanta, *PhD*
Director, Product Management and Innovation

Ting Wu
Senior Geospatial Analyst

About Verisk

Verisk (Nasdaq:VRSK) is a leading data analytics provider serving customers in insurance, energy and specialized markets, and financial services. Using advanced technologies to collect and analyze billions of records, Verisk draws on unique data assets and deep domain expertise to provide first-to-market innovations that are integrated into customer workflows.

Verisk offers predictive analytics and decision support solutions to customers in rating, underwriting, claims, catastrophe and weather risk, global risk analytics, natural resources intelligence, economic forecasting, and many other fields. Around the world, Verisk helps customers protect people, property, and financial assets. Our industry-leading brands include ISO, Xactware, AIR Worldwide, Argus, and Wood Mackenzie.

For more information, visit www.verisk.com/insurance.

Verisk™