

# The Data Quality Analytics Module in Touchstone

## HIGHLIGHTS

With the Data Quality Analytics Module, you can:

- Assess the impact of poor exposure data on uncertainty in modeling results
- Evaluate your exposure data and identify areas where the data may be unreasonable
- Fill in missing values or replace questionable data
- Understand how a portfolio compares with industry distributions
- Leverage the vast data resources of AIR's parent company Verisk Analytics

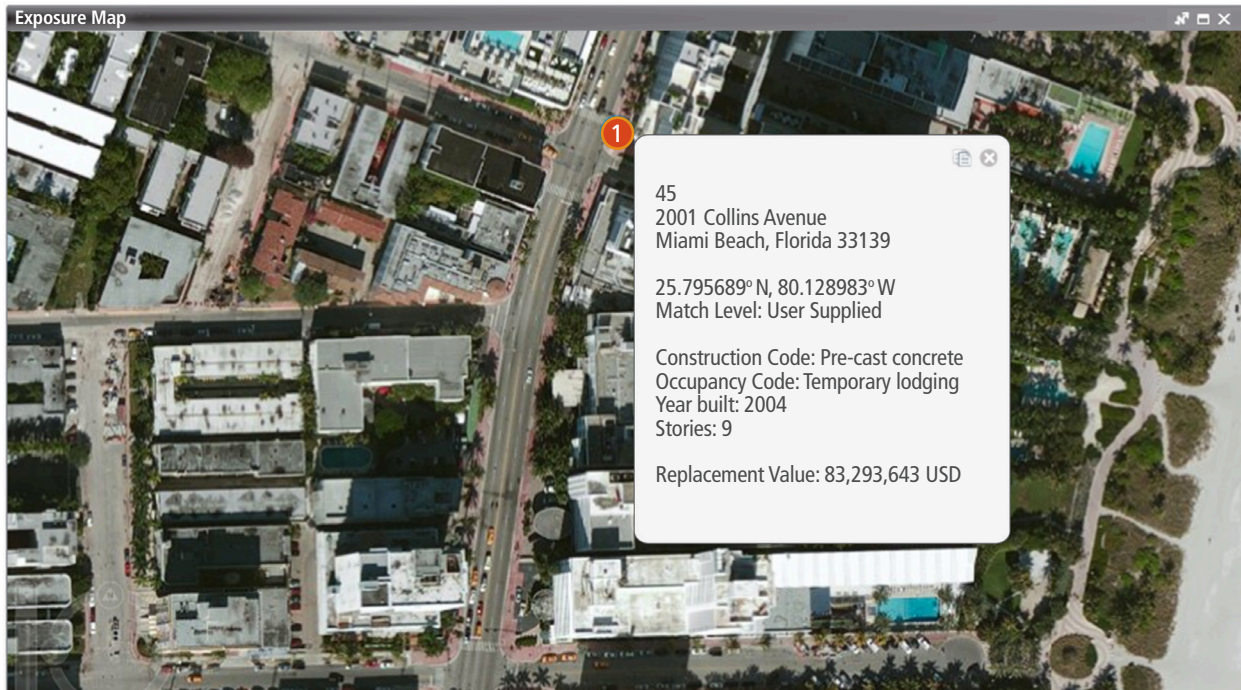
Inputting incomplete or inaccurate exposure data into a catastrophe model can lead to dramatic under- or overestimation of your risk. Yet many analyses continue to be run with poor quality data on individual properties, leading not only to misinformation about risk but also inappropriate pricing. AIR has designed Touchstone® to help you own your risk—and that starts with truly understanding your exposure data.

Upon importing your data into Touchstone, you are immediately presented with a user-friendly Exposure Summary Dashboard that provides a high-level snapshot of where your exposure is located. It also reveals exposure composition and completeness, including breakdowns by occupancy and construction, building age and height, geocode quality, and more. Using these visualization tools, you can quickly identify data issues right from the start.

Touchstone's global integrated mapping technology lets users zoom in to view exposures at street level, enabling underwriters and other stakeholders to better understand individual risks.

Touchstone's mapping tool allows you to quickly grasp the global extent of your portfolio.





Examine your exposure at the street level to better understand its risk characteristics.

Because Touchstone enables you to understand your distribution of exposure—in any country—you can avoid blind spots in risk accumulation. But simply knowing where your exposure is located is not enough; you need to identify where the quality of your data falls short—and improve it where you can.

Going beyond the Exposure Summary Dashboard, Touchstone’s Data Quality Analytics Module comprises a suite of tools to assess and even enhance your exposure data so that, in the end, your decisions are informed by the best analysis possible and an awareness of the extra uncertainty that comes with any remaining weakness in exposure data. Those tools include scoring, validation, benchmarking, and augmentation of your exposure data.

## SCORING

Companies routinely estimate the risk for a location or a set of locations, taking into consideration both the hazard level and the value of what is exposed to that hazard. There is an additional risk—an additional source of uncertainty—if your exposure data is inadequate. To help you evaluate that risk, we have made two scores available to assess the quality of your U.S. exposure data.

Both scores are part of Touchstone’s Data Quality Analytics Module, which leverages AIR’s acclaimed industry exposure database and catastrophe models to develop scores that assess the impact of inadequate exposure data on uncertainty in catastrophe modeling results. Individual locations within a portfolio are scored and then combined for a portfolio-level score.

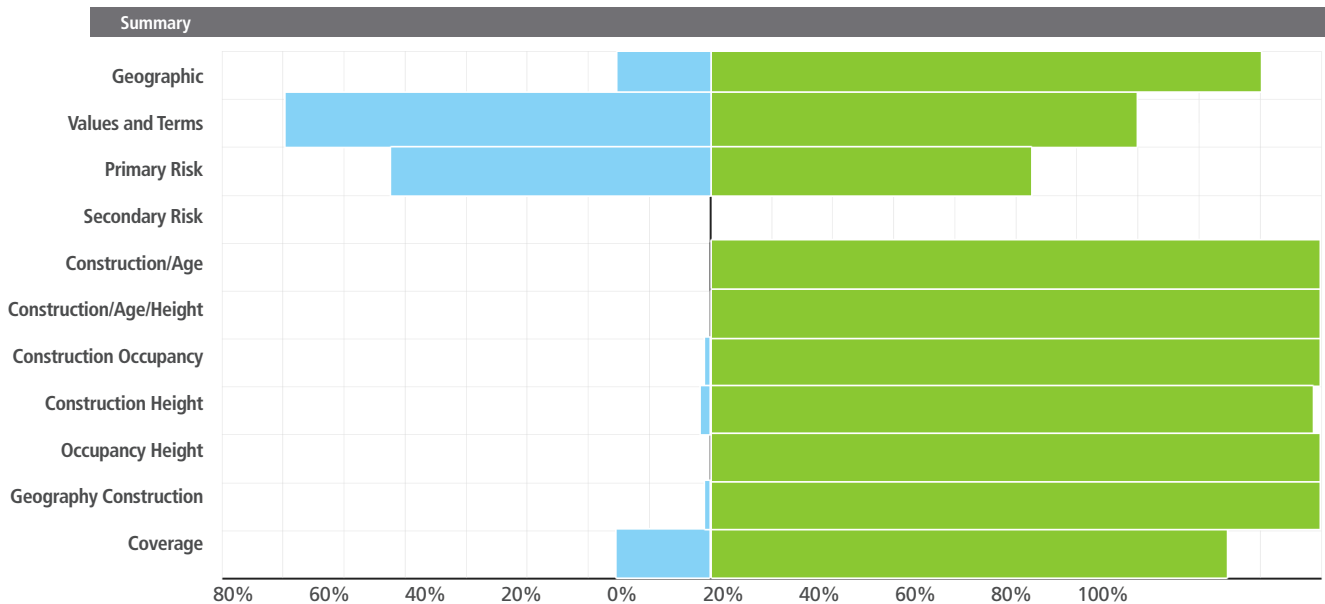
The **OVERALL RISK SCORE** is a measure of the combined risk due to region-specific perils and hazards, the fidelity of your exposure data, and the property's value. The Overall Risk Score can be provided at the location level, for segments of portfolios, or for whole portfolios for easy comparison. While location-level Overall Risk Scores can be very large (they are a direct function of replacement value), the portfolio Overall Risk Score is scaled to produce values between 0 and 100. A higher risk score indicates a higher level of risk.

To complement the Overall Risk Score, the Data Quality Uncertainty component is provided. The figure represents the impact of poor data quality on the location's Overall Risk Score. It quantifies the improvement in the Overall Risk Score that is possible with better exposure data quality. With this information, risk managers can identify the locations where improved data quality can deliver the most significant returns on risk reduction.

The **DATA QUALITY SCORE** is a measure of how missing or inaccurately geocoded exposure data impacts uncertainty in modeling results. This score can be used to readily communicate to key stakeholders or to differentiate portfolios on the basis of data quality alone. Data Quality Scores are expressed as values between 0 and 100, with 100 representing the best possible score. (Note that a score of 100 does not necessarily mean there are no "Unknowns" for a particular location; some data about a property may still be incomplete, but the missing information has no material impact on losses.)

**VALIDATION**

The data validation analysis provides a deeper assessment of the completeness and reasonability of catastrophe exposure data before they are analyzed. Completeness checks identify exposures for which building characteristics are unknown, while reasonability checks look for data



Validate your exposure data against a set of completeness and reasonability rules.

irregularities—combinations of building characteristics that don't make engineering sense, for example. When a data validation analysis identifies missing or questionable data, users can quickly examine the data in question and make any necessary changes. Validation results provide guidance on steps you can take to enhance exposure data at the portfolio level.

Completeness checks consist of simple, transparent rules to identify where data are missing. Analysts have the flexibility to define their own rules or modify the rules provided in the software. Companies can determine if a property is accurately geocoded and whether the data contain complete information on the property's replacement value and risk characteristics (e.g., construction, occupancy, and others).

Reasonability checks provide information on the reliability of data. AIR structural engineers have developed an extensive rules hierarchy to identify unrealistic or inconsistent values and unlikely combinations of property characteristics. For example, some portfolios have been known to contain seven-story wood frame buildings, or a mobile home with a replacement value of \$200,000, or an unusually high percentage of residential locations coded as reinforced concrete—all examples that would raise red flags about the quality of the exposure data.

Touchstone's data validation tool supports the United States and the following European countries:

- Austria
- Belgium
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Ireland
- Latvia
- Lithuania
- Luxembourg
- The Netherlands
- Norway
- Poland
- Sweden
- Switzerland
- United Kingdom

The information provided by a Touchstone validation analysis can also help insurers quickly prepare exposure summaries that satisfy the exposure data

reporting requirements in the A.M. Best Property/Casualty Supplemental Rating Questionnaire (SRQ)—information that answers questions on geocoding, property attributes, data verification, bulk coding, and more. Similarly, this information can be valuable in demonstrating data quality under Solvency II.

### **BENCHMARKING**

A benchmarking analysis enables companies to better understand how their portfolios compare with industry distributions in terms of lines of business, construction types, occupancy classes, replacement values, and market share. Benchmarks can be reported at various geographic resolutions, including county and state. Benchmarking is available for properties in the U.S. and Europe (see list of countries in previous section, "Validation"), on a country- and CRESTA-level basis.

Industry distributions are derived from AIR's industry exposure databases (IEDs), which contain information on residential and commercial insured properties and their replacement values. The AIR IEDs are the industry's most trusted sources of property information. They are the basis for AIR industry loss estimates and underlie CATRADER®, the industry standard for analyzing catastrophe reinsurance and insurance-linked securities.

Benchmarking can raise red flags about sources of risk that may be otherwise hard to see. Benchmarking data can also be used to evaluate market share variations by geographical area and attributes.

### **AUGMENTATION**

With Touchstone's data augmentation capability, users can fill in missing values or replace data that are questionable. Data augmentation leverages Touchstone's property-specific database, which includes geocoded location, building characteristics, and replacement cost estimates for more than 6.3 million of the estimated 10 million commercial buildings and 79.2 million of the estimated 90 million residential buildings in the United States.

The property-specific database is a blended data set created with the benefit of data sources unique to Verisk Analytics, AIR's parent company, as well as census and tax data. The blended data approach enables AIR to assemble the most reliable data for each attribute. Verisk data sources contributing to the property-specific database include site-surveyed building information from ProMetrix™, insurance-ready public-records data from ISO PushPin™, and replacement-cost estimates from Verisk's 360Value®. The database continues to grow rapidly; the contribution from ProMetrix alone is growing at a rate of between 100,000 and 200,000 buildings a year.

Any of the following data elements for individual properties in the United States may be available in Touchstone's Data Quality Analytics Module:

- ISO BIN (Building Identification Number)
- Geocode (Lat/Long)
- Building replacement value
- Construction
- Occupancy
- Year built
- Number of stories
- Square footage
- Roof shape
- Roof cover
- External wall type
- Foundation type
- Number of employees

The property-specific database has been validated through a multi-step process to test data accuracy and reliability, including the use of reasonability rules to

identify and filter out unrealistic data, validation of questionable data using satellite and aerial images, and identifying and researching unusual data shifts of property-specific records. AIR then assigns each element a quality grade, which allows the user to determine if the property-specific data element is a more suitable option than the data they already have.

In fact, Touchstone provides a consistency check that indicates when user data are consistent with PSD data. The consistency check offers additional assurance of the accuracy of a company's data above and beyond actually augmenting data.

Because there are millions of buildings in the United States with ambiguous addresses—which can lead to errors in building identification—the Data Quality Analytics Module includes the ISO BIN, which takes the ambiguity out of building identification. Ambiguous addresses include: properties that have multiple addresses but are, in fact, the same building; properties that have a single address but, in reality, represent multiple buildings; and vanity building names. All of these types of ambiguous addresses create challenges for obtaining reliable catastrophe risk analyses.

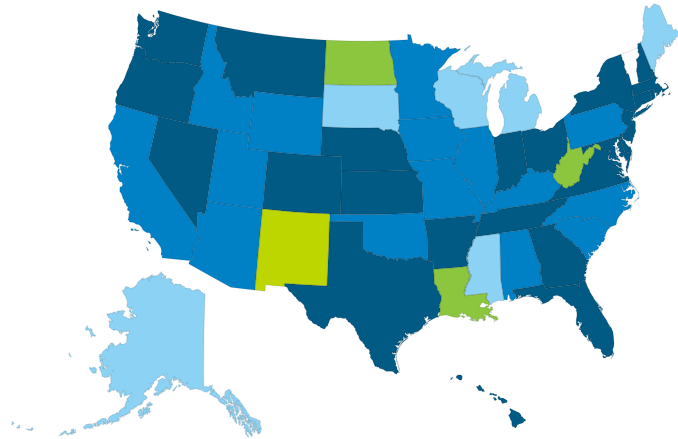
The ISO BIN helps identify buildings using an alphanumeric key that unlocks the door to the property-specific information needed for catastrophe modeling. To help companies more easily and accurately identify individual buildings, each building in Touchstone's property-specific database is assigned an ISO BIN. When the ISO BIN is provided, the Data Quality Analytics Module provides optimal access to detailed building information.

A comprehensive effort to improve exposure data quality can reduce uncertainty in modeled losses, improve decision-making—and provide a true competitive advantage.

COVERAGE OF TOUCHSTONE'S PROPERTY-SPECIFIC DATABASE

U.S. — RESIDENTIAL

Total Buildings (BINs)	79.2 Million
Replacement Values	76%
Construction	60%
Year Built	92%
Occupancy	100%
Number of Stories	77%
Gross Area	92%
Roof Shape	16%
Roof Cover	50%
Exterior Wall Siding	55%
Foundation	29%

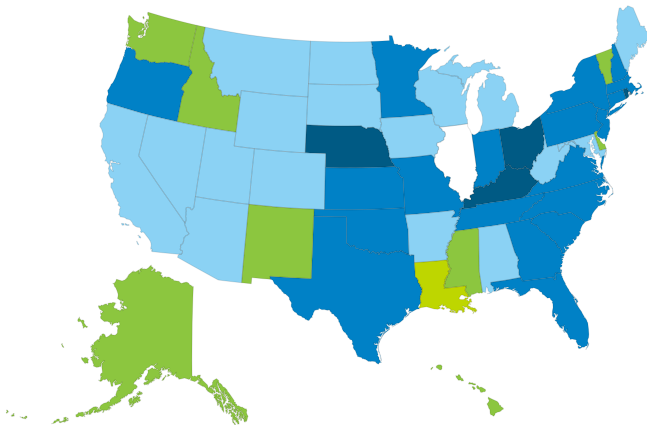


Property Specific Database Residential Coverage



U.S. — COMMERCIAL

Total Buildings (BINs)	6.3 Million
Replacement Values	65%
Construction	69%
Year Built	89%
Occupancy	96%
Number of Stories	84%
Gross Area	93%
Roof Shape	7%
Roof Cover	16%
Exterior Wall Siding	20%
Foundation	5%
Employees	53%



Property Specific Database Commercial Coverage



## FEATURES AT A GLANCE

Licensing the Data Quality Analytics Module in Touchstone lets you:

- Quickly assess the quality of your exposure data through easy-to-interpret charts, tables, and maps
- Easily assess the extent to which data quality impacts your overall risk
- Identify anomalies in your exposure data to uncover systemic sources of data quality problems
- Understand how the property values and building attributes in your portfolio compare with industry distributions
- Enhance your exposure data with the detailed property-specific data unique to Touchstone and Verisk for more reliable catastrophe analyses
  - » Site-surveyed building information from ProMetrix
  - » Insurance-ready public records data from ISO Pushpin
  - » Replacement-cost estimates from 360Value

To learn more, please contact your AIR representative or visit us at:  
<http://www.air-worldwide.com/Software-Solutions/Touchstone/>

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