

**WORKSHOP - GEOGRAPHIC INFORMATION SYSTEMS FOR  
HOUSEHOLD INSURANCE  
Tom Wright**

**OVERVIEW**

The workshop will focus on the types of geographic information available and the principles involved in using this type of information in premium rating, product design, strategic planning and catastrophe modelling.

Participants are encouraged to contribute their own insights and experience.

There will not be a systematic discussion and comparison of particular commercially available systems, although contributions in this area will be welcome.

**TOPICS TO BE COVERED**

Resolution of information: post-codes.

Types of information:

- raw geographic information (eg topography, geology, soil, population census),
- hazard assessments for individual insured perils (eg frequency and strength of wind-storms),
- vulnerability of building stock to insured perils (expected cost, frequency, severity, random variation),

Perils:

- subsidence,
- storm,
- flood,
- freeze,
- theft,
- fire.

Primary uses of geographic information systems:

Premium rating:

- pure premium by peril (post-code base premiums and vulnerability loadings),
- number of claims by peril (for expense loading),

Product design, strategic planning:

- testing effects of geographic diversification,
- testing effects on whole account of changes in coverage, deductibles etc.

Catastrophe modelling:

- correlations between losses from different regions,
- optimum reinsurance arrangements,
- reinsurance pricing, allowing for correlations between cedents.

Combining geographic information with information from insurer's own exposure and claims data:

- explanatory variables in GLMs,
- absolute vs relative risk,
- hazard vs vulnerability (own data may be better for unusual vulnerability loadings/discounts),
- allowing for own underwriting standards, distribution channels.