

**Data Mining Technologies Inc.**  
***Knowledge Discovery From Databases***

# Data Mining Model Types

---

## White Paper

Michael Gilman PhD.  
Data Mining Technologies  
631 692-4400 ext 100  
www.data-mine.com

---



May 2004

## Model Types Used by Data Mining Technologies

The following represents a sampling of the types of modeling efforts possible using Nuggets the Data Mining Toolkit offered by Data Mining Technologies for the banking and Insurance Industries. Many other model types are used and we would be happy to discuss them in more detail if you contact us.

### Claims Fraud Models

The number of challenges facing the Property and Casualty insurance industry seems to have grown geometrically during the past decade. In the past, poor underwriting results and high loss ratio were compensated by excellent returns on investments. However, the performance of financial markets today is not sufficient to deliver the level of profitability that is necessary to support the traditional insurance business model. In order to survive in the bleak economic conditions that dictate the terms of today's merciless and competitive market, insurers must change the way they operate to improve their underwriting results and profitability.

An important element in the process of defining the strategies that are essential to ensure the success and profitable results of insurers is the ability to forecast the new directions in which claims management should be developed. This endeavor has become a crucial and challenging undertaking for the insurance industry, given the dramatic events of the past years in the insurance industry worldwide.

We can check claims as they arrive and score them as to the likelihood of they are fraudulent. This can result in large savings to the insurance companies that use these technologies. (See white paper).

### Customer Clone Models

The process for selectively targeting prospects for your acquisition efforts often utilizes a sophisticated analytical technique called "best customer cloning." These models estimate which prospects are most likely to respond based on characteristics of the company's "best customers". To this end, we build the models or demographic profiles that allow you to select only the best prospects or "clones" for your acquisition programs.

In a retail environment, we can even identify the best prospects that are close in proximity to your stores or distribution channels. Customer clone models are appropriate when insufficient response data is available, providing an effective prospect ranking mechanism when response models cannot be built.

### Response Models

The best method for identifying the customers or prospects to target for a specific product offering is through the use of a model developed specifically to predict response. These models are used to identify the customers most likely to exhibit the behavior being targeted.

Predictive response models allow organizations to find the patterns that separate their customer base so the organization can contact those customers or prospects most likely to take the desired action. These models contribute to more effective **marketing by ranking the best candidates for a specific product offering thus identifying the low hanging fruit.**

### Revenue and Profit Predictive Models

**Revenue and Profit Prediction models combine response/non-response likelihood with a revenue estimate, especially if order sizes, monthly billings, or margins differ widely. Not all responses have equal value, and a model that maximizes responses doesn't necessarily maximize revenue or profit. Revenue and profit predictive models indicate those respondents who are most likely to add a higher revenue or profit margin with their response than other responders.**

**These models use a scoring algorithm specifically calibrated to select revenue-producing customers and help identify the key characteristics that best identify better customers. They can be used to fine-tune standard response models or used in acquisition strategies.**

### **Cross-Sell and Up-Sell Models**

**Cross-sell/up-sell models identify customers who are the best prospects for the purchase of additional products and services and for upgrading their existing products and services. The goal is to increase share of wallet. Revenue can increase immediately, but loyalty is enhanced as well due to increased customer involvement.**

**Attrition Models**

Efficient, effective retention programs are critical in today's competitive environment. While it is true that it is less costly to retain an existing customer than to acquire a new one, the fact is that all customers are not created equal. Attrition models enable you to identify customers who are likely to churn or switch to other providers thus allowing you to take appropriate preemptive action.

When planning retention programs, it is essential to be able to identify best customers, how to optimize existing customers and how to build loyalty through "entanglement". Attrition models are best employed when there are specific actions that the client can take to retard cancellation or cause the customer to become substantially more committed. The modeling technique provides an effective method for companies to identify characteristics of chumers for acquisition efforts and also to prevent or forestall cancellation of customers.

**Marketing Effectiveness Creative Models**

Often the message that is passed on to the customer is the one of the most important factors in the success of a campaign. Models can be developed to target each customer or prospect with the most effective message.

In direct mail campaigns, this approach can be combined with response modeling to score each prospect with the likelihood they will respond given that they are given the most effective creative message (i.e. the one that is recommended by the model).

In email campaigns this approach can be used to specify a customized creative message for each recipient.

**Real Time Web Personalization**

Using our eNuggets real time data mining system websites can interact with site visitors in an intelligent manner to achieve desired business goals. This type of application is useful for eCommerce and CRM sites. eNuggets is able to transform Web sites from static pages to customized landing pages, built on the fly, that match a customer profile so that the promise of true one-to-one marketing can be realized.

eNuggets is a revolutionary new business intelligence tool that can be used for web personalization or other real time business intelligence purposes. It can be easily integrated with existing systems such as CRM, Outbound telemarketing (i.e. intelligent scripting), insurance underwriting, stock forecasting, fraud detection, genetic research and many others.

e-Nuggets(tm) uses historical (either from company transaction data or from outside data) data to extract information in the form of English rules understandable by humans. The rules collectively form a model of the patterns in the data that would not be evident to human analysis. When new data comes in, such as a stock transaction from ticker data, e-Nuggets(tm) interrogates the model and finds the most appropriate rule to suggest which course of action will provide the best result (i.e. buy, sell or hold).