

**A Valuation and Value Updating of  
Geographically Diverse Commercial Properties  
Using Artificial Neural Networks**

Richard A. Borst, President  
Applied Image & Information Division  
Day & Zimmermann, Inc.

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(Authors Note: At the time of submission, the data conversion portion of the project has not been completed. Therefore, statistical results were not available. They will be presented at the Fall 1993 IAAO Conference, and a written paper will also be available at that time.)

**OUTLINE OF PAPER**

Introduction

The appraisal problem is defined. A New England based financial institution holds a portfolio of some 3,500 commercial properties with values in excess of one million dollars each. By agreement with Federal regulators, each property in this portfolio must have its appraisal updated annually. Given that the average cost of an appraisal update is approximately \$3,500, an annual cost of over twelve million dollars is being incurred to meet the requirement.

The Solution Approach

Basically the solution approach is to apply the techniques of computer assisted mass appraisal (CAMA) to the problem to determine if defensible estimates of value can be produced, on some high percentage of the properties. With reliable value estimates, the case will be made to regulators for an alternative mechanism to establishing the values within the real estate portfolio.

Two model formulations were considered. The first relied on the existence of properties which had been appraised more than once, and at different points in time. This allowed construction of a model that would allow for estimation of appraised value given a previous appraised value. The second model formulation was the more typical approach of estimating appraised value (not selling price) from property characteristics and other economic factors.



Tools Used

A number of software products were used in performing the analysis including:

**ANALYSIS TOOLS**

Tool	Use
Paradox for Windows	Database Construction/Analysis Reporting
Map Info for Windows	Locational Analysis
Brain Maker	Neural Network Under Model Building and Calibration
Number Cruncher Statistical System	Multivariate Analysis

Results and Conclusions

Forthcoming at Conference.