

**We draw on** academic rigor and practical experience in the application of statistics and econometrics to building complex business models in a variety of industries.

Models are often key resources in strategic decision-making, yet too many of the models companies use lack the rigor and flexibility to take advantage of the research and analytical effort invested in their inputs. Opaque models do not reveal their assumptions clearly, readily allow new data to be incorporated, or permit efficient exploration of various scenarios.

For example, we frequently create market models in the course of engagements involving research and strategy development, and also as discrete tasks, creating a structured, flexible, and transparent tool to integrate an organization's existing data and hypotheses about its markets.

In working with clients on market strategy questions, Analysis Group has developed market models that executive staff use to document forecasts for financial planning and also on an ongoing basis – to test assumptions, run alternative scenarios, and incorporate new inputs. A well-designed model also becomes a communication tool, allowing members of an organization to build a shared view of uncertain or challenging market conditions and important investment decisions.

We have built a variety of superior models to better assist companies in their strategic decision-making. Examples of models include:

### Energy

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We frequently analyze electricity markets using detailed unit dispatch models. For example, in the context of a recent litigation assignment, we modeled

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the entire Eastern Interconnection using a zonal simulation model. These models can also be used to address policy questions. We have also developed detailed, specific understanding of regional wholesale pricing structures through modeling efforts that we have applied to a broad range of applications, including:

- Estimating the economic impacts of adding an incremental generating resource into a system
- Valuing an asset
- Understanding the comparative advantages of locations for a generating resource
- Comparing the advantages of resource options (distributive generation versus building a power plant or a transmission line)
- Assessing market risks and opportunities for an equipment supplier
- Modeling wholesale electric prices
- Evaluating the economic benefits or costs of a policy initiative
- Modeling market power issues in the context of mergers or applications for market-based rate authority at FERC

### Long-term Financial Planning

We used Monte Carlo simulation to help forecast operations for an energy provider by valuing a fleet of peaking generation units operating in the Mid-western U.S. We used our own Monte Carlo-based model to simulate the operation of these units over a 15-year period, based on the historical price dynamics in the region and on forward price data. The model relied upon a stochastic characterization of electricity and gas prices and their correlation to calculate operating profits contingent on the plant being

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economical and operating for a given draw from the price process.

## Health Care

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### Generic entry

Pharmaceutical patent expiration and the entry of generic products fundamentally changes the dynamics of the product market and often the therapeutic class. Existing models of market share and physician response to promotional and other activities no longer provide useful insight. Analysis Group has developed numerous models using large sets of historical and competitive data, new primary research and extensive econometric analysis, in order to establish predictive share insight and evaluate the merits of options such as an authorized generic or continued promotional activity.

### Legislative Change

We developed models to help the pharmaceutical industry preparing for the implementation of the Medicare Modernization Act in 2006. The shift in coverage for millions of individuals in the U.S. affected utilization of particular therapies, with significant implications for the way companies optimally price, promote, and contract for those therapies. Our models allowed managers to anticipate patient flows among all relevant coverage categories, response to different plan types, and competitive and contracting intensity within classes.

### Resource Optimization

For one of our clients in the biotechnology industry, Analysis Group developed a model to analyze available resources and demonstrate optimal scheduling practices for its customers, physician office practices. The model applies operations research based heuristics to generate solutions to scheduling problems under multiple complex constraints. The model outputs allow the client's business specialists to identify capacity constraints, the remaining time until a constraint will be reached given patient growth and attrition, and suggest solutions involving new resources. The optimization model is being used in the field by approximately 100 business specialists

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and provides key inputs to a "dashboard" model that Analysis Group developed for benchmarking performance across accounts and regions.

### Product Development

We developed a portfolio model to help a client in the pharmaceutical industry to value its R&D portfolio. The company had utilized a Monte Carlo-based simulation approach to understand the variability in possible outcomes as well as the expected value that would come from discounted cash flow and a binomial decision tree.

The size and complexity of the company's portfolio made it inefficient to use commercially available software, leaving the corporate team charged with modeling the portfolio frustrated by slow model runs. Analysis Group developed a portfolio model in just two weeks that reduced the run time for a portfolio scenario from hours to less than five minutes. In a subsequent phase of work, our team created a custom user interface that greatly simplified varying project and outcome assumptions.

### Strategic Decisionmaking

We worked with the CFO of a diversified global health care company developing a new biological product. At issue were the relative merits of building a facility to manufacture the product as opposed to purchasing the product from a partner company with available capacity. Discounted cash flow analysis suggested that the facility should be constructed immediately, to be ready when product launch was expected. Our real options analysis, however, which accounted for the volatility in expected revenues, as well as the uncertain timing of product launch, demonstrated that deferring investment in the facility was the dominant investment option. Our model showed the thinking behind the real option as well as clearly illustrating the computation, which helped our client achieve consensus in his decision to defer construction of the manufacturing facility.

### Pricing and Segmentation

Analysis Group was asked by a major pharmaceuticals manufacturer to develop the launch pricing and

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payer contracting strategy for a new oral allergy medication in the U.S. and EU. This involved an extensive program of research with payers (managed care pharmacy directors at large national plans/insurers), physicians (GPs and specialists), and patients. Combining primary market research data with secondary plan-level information such as market share and formulary management, we developed a segmentation of payers reflecting the different price sensitivity and associated formulary management policies of high-control plans, low-control plans, and PBMs. Applying this segmentation, we modeled the access and utilization under different market scenarios. Finally, we recommended an optimal pricing and managed markets strategy based on an integrated access-utilization model and sensitivity analysis.

## Securities and Financial Instruments

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### Stock Options

Analysis Group's proprietary binomial-based models are explicitly designed to reflect the unique features of employee stock options (ESOs), especially the interplay between vesting, departure, forfeiture, and early exercise. Our binomial framework provides the power to address features of existing ESOs as well as the new features that resulted from Financial Accounting Standards regulation FAS 123R. Our models can value ESOs both from the perspective of cost to the firm and of value to the employee. In addition to incorporating the effects of standard ESO features such as non-transferability, forfeiture, early exercise, and vesting schedules, Analysis Group models can incorporate the effect of nonstandard features. ■