J.D. Opdyke

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EDUCATION

Massachusetts Institute of Technology, ASP Fellow, Math/Statistics, 1999
Harvard University, Master in Public Policy, concentration: empirical methods (statistics/econometrics), 1992

- Kennedy Fellowship (3 of 170 students)
- Social Policy Research Fellowship (3 of 170 students)

Yale University, Bachelor of Arts, Sociology and Psychology (with honors), 1987

SKILLS / EXPERIENCE SUMMARY

- **Consulting**: Over 20 years consulting and practice management experience at quantitative consulting firms
- **Industries**: Corporate Banking/Operational Risk, Mortgage Banking/Credit Risk, Venture Capital, Credit Card, Telecom, Retail Pricing, Quantitative Marketing
- **Statistics/Econometrics/Analytical Modeling** – Selected methods: VaR-based Capital Estimation; robust statistics; extremely efficient resampling methods (permutation tests, bootstrap, jackknife); combinatorial algorithms; recurrent events and survival analysis (non-proportional hazards); algorithmically efficient exact inference, extensive Monte Carlo, & multiple comparisons; discrete choice and limited dependent variable modeling (logit, probit, and tobit-related); time series (TSCS, ARIMA, GARCH); classification algorithms (CART, CHAID, Hybrid); nonparametric regression; statistical sampling, power analysis; neural nets.
- **Risk Analytics**: Operational Risk Capital Estimation (robust estimation of (truncated) severity distribution parameters (OBRE, MDE's, multivariate approaches)), paper published in ***Journal of Operational Risk*** Voted **WINNER** of ORR Innovation Awards' "Paper of the Year"; Credit Risk (PD, LGD, EAD); Market Risk (risk-adjusted performance metrics); and Model Risk.
- **SAS**: Over 20 years near daily experience – Base SAS, SAS/STAT, SAS/ETS, and Advanced SAS Macro
  - Beyond guru-level expertise implementing original statistical/econometric/algorithmic solutions ***orders of magnitude faster than existing SAS Procs*** (for clients and in multiple peer-reviewed publications) using only SAS code
  - Presented paper at national SAS conference, **Voted WINNER – Best Paper for Statistics/Pharma** (later published)
  - **SAS courses**: Enterprise Miner, Advanced Programming Techniques, Coding Optimization, and Advanced Macros

PROFESSIONAL EXPERIENCE

DataMineit, LLC **www.DataMineit.com**
Senior Managing Director, Risk Analytics & Quantitative Strategies **2002 – present**

Provide profitable statistical/econometric modeling, risk analytics, and algorithm development to the industry/consulting sectors.

- GE Capital: For the Enterprise and Operational Risk Group, designing and implementing a preliminary, but comprehensive and complete, Operational Risk Capital Estimation Framework. Based on statistically rigorous, defensible, and robust methods, the framework properly accounts for truncated distributions and utilizes multivariate models incorporating KRI's to translate raw loss data into fully compliant Basel II–AMA capital estimates.
- Barclays Capital: For the Group Operational Risk Team, researched, tested, and implemented robust statistical alternatives for more stable and reliable (heavy-tailed) severity distribution parameter estimation. Designed and implemented homogeneity analyses across all units of measure, as well as distributional hypothesis testing of internal vs. external loss event data.
- Northern Trust: For the Corporate Operational Risk Group, per Basel II guidelines, researched, tested, and developed robust statistical alternatives to MLE for more stable and reliable capital estimation and severity distribution parameter estimation (heavy-tailed, truncated, mainly CPBP). Gave statistical modeling presentations to inform and develop regulatory strategy; incorporated multivariate regression approaches to mitigate heterogeneity within units of measure and account for time-varying real truncation thresholds. Also developed fully data-driven agglomeration algorithms to provide guidance on unit-of-measure definition.
- Correlation Ventures: As the Director of Quantitative Strategies (6/7-4/10), developed from scratch and implemented the firm's portfolio selection investment algorithms using a proprietary dataset containing tens of thousands of exit-related financing rounds spanning 20 years. As the sole model developer, wrote over 400K lines of SAS code. Made detailed presentations of model performance to all sizeable potential investors (including 3 largest institutions (as of 4/10) prior to their commitments to invest).
- Numerous Big 4 and Economic Consulting Firms: On large litigations ($0.4b damages), developed econometric models (TSCS, ARMA, non-proportional hazards) for event studies, price estimation, and services valuation (airlines, software, mutual funds); presented expert testimony in federal court arbitration; developed nonlinear price elasticity of demand models.
- American Express: For $1B+ liability in rewards points, a) ensured robust estimation of complex statistical measures by deriving and implementing an original, mathematically optimal algorithm for automating the re-aggregation of "thin data" segments in large-data production runs (method later published); b) proposed and implemented econometric modeling of points redemptions with recurrent events models; c) automated model selection for logistic regressions, turning hours of manual coding intervention into seconds of automated runtime; d) designed formal presentations of new methodologies for senior management (up to CFO).
- Wells Fargo: For portfolios of 8 million mortgages and over half trillion USD, improved the estimation of creditworthiness by a) performing original econometric modeling of credit risk and delinquency behavior using proportional and non-proportional hazards, time series, count data and logistic regression models; b) increased the speed of established company SAS macros (from over a week to minutes) and created original statistical SAS Macros faster than SAS Procs, thus allowing the implementation of previously runtime-prohibitive analyses; c) analyzed complex credit class rules and quantified the impacts of proposed improvements; d) single-handedly designed technical presentations and presented across groups of senior management.

Bates White LLC **2012 – 2013**
Principal: Designated Operational Risk Modeling Expert for Global 50 and Fortune 500 financial organizations. Designed unbiased VaR estimators for operational risk capital estimation and, consistent with Basel II's AMA, designed and implemented an entire OpRisk capital estimation framework – from loss data to capital – incorporating almost 100 units-of-measure.

Bank of America, Corporate Investments Group **2010**
SVP – Sr. Quantitative Finance Manager: Responsible for credit portfolio management vis-à-vis model development and application, overall project management of Credit project (PD, LGD, EAD model review), and econometric research; coded computationally intensive statistical procedures nearly an order of magnitude faster than the relevant SAS Procs.

Andersen LLP, Economic Consulting Group
Senior Manager **1998 – 2002**
Conducted and supervised applied microeconomic, statistical, and econometric analyses in economic litigation consulting and the implementation of statistical data mining for diverse business consulting services. Provided key business development as one of the original senior managers building a new firm practice (1st hire into Boston office, 3rd team member nationally). Growth to 30 team members upon departure 4 years later to start own firm. Individually responsible for hiring, training, and evaluating over half a dozen consultants; developed and led statistics/econometrics trainings.

ANDERSEN, LLP: TELECOMMUNICATIONS:

- Wrote and implemented permutation test statistical software for a Regional Bell Operating Company (RBOC) to satisfy the Operations Support Services (OSS) performance measurement regulatory requirements of multiple states and §271 of the Telecommunications Act of 1996. Code is 5x faster than pre-compiled code from a top statistical software firm consulted on the project, and 80x faster than the implementation of a competing consulting firm **(SAS, PROC StatXact)**
- Conducted a comprehensive statistical analysis and data audit of the retail and resale markets of an RBOC to satisfy state and federal (§271 of the Telecommunications Act of 1996) regulatory requirements **(SAS)**
  - selected and implemented rigorous parametric and nonparametric statistical methods for parity testing on the full range of §271-related OSS performance measure data (hundreds of performance measures)
  - hired and managed a team of consultants during initial phase of data/statistical parity analysis
  - developed a statistical algorithm for a mandated, computationally intensive statistical test (permutation test) which cut computer runtime from well over a week into hours
  - wrote a statistical affidavit detailing the appropriate implementation of permutation tests for OSS parity testing
  - performed root cause statistical analyses to determine causes of disparate service provision to CLECs
  - wrote technical appendix of a statistical affidavit filed with multiple state public service commissions
  - managed the implementation of strict quality control guidelines verifying data integrity
- For the audit of a large Bell Company, estimated cost of ISP traffic relative to CLEC local exchange revenue
- Determined and implemented a range of statistical sampling methods for an RBOC potentially facing large fines regarding its call-monitoring practices **(SAS)**
- Employed many parametric and nonparametric statistical sampling and testing methods for two RBOCs requiring, under regulatory mandate, a performance measure sampling methodology **(SAS)**

ANDERSEN, LLP: PRICING / RETAIL:

- Created a comprehensive firm-wide pricing tool for a multibillion dollar global professional services firm. Project manager for the data analysis component requiring identification, cleaning, and merging of disparate internal financial and client data to perform modeling for price prediction and strategy. Methods used included hedonic regression, neural nets, and the application of resampling methods to tobit models. For each model, constructed GUI interfaces that accepted project and client characteristics as input, and as output, predicted prices with user-specified confidence intervals. **(SAS, Statistica, Excel)**
- Increased profit margins for the largest privately owned retail organization in the country as project manager of the data mining component of a comprehensive product, customer, and pricing and profitability analysis. Developed and implemented a data warehouse system linking point-of-sale data (half a billion records annually) with databases across multiple systems (store, merchandise, store account, and department) to perform: a) multivariate customer segmentation utilizing various classification algorithms; b) econometric modeling of purchasing behavior; and c) sales margin, price point, geographic, competitor, departmental, and product class analyses. **(SAS, Angoss (KnowledgeSEEKER), SPSS (AnswerTree))**
- For an audit of a retail manufacturer, estimated total dollars correctly invoiced by designing and implementing nonparametric stratified bootstrap algorithms applied to ratio estimators. **(SAS, S-Plus)**
- Increased profit margins for a national retail department store as the project manager for the data mining component of a comprehensive product, customer, and pricing analysis. Performed multivariate customer segmentation utilizing various classification algorithms, as well as competitor, price point, profit margin, geographic, departmental and product class analyses. **(SAS, SPSS (AnswerTree))**

ANDERSEN, LLP: LITIGATION / REGULATION:

- Project manager of an evaluation of statistical sampling techniques of a Department of Justice audit of a city's administration of federally funded programs; case settled favorably based mainly on analysis **(SAS)**
- Project manager of a $0.5 billion litigation for a Fortune 50 global retailer. Critiqued opposing expert's time-series – cross-section econometric event study and assisted counsel in numerous depositions **(SAS)**.
- Project manager of a 65,000 individual class action lawsuit requiring extensive database construction, statistical and data analysis, and damages scenario analyses **(SAS)**
- Project manager of an IRS binding arbitration case. Conducted all analysis for Expert Report and Decision
- Project manager of a personal injury litigation. Critiqued opposing expert's analyses, assisted counsel in depositions.
- Performed demographic analyses in support of smoking-related tobacco class action litigation **(SAS)**
- Performed statistical analyses for an electric utility estimating incremental benefits of improved metering accuracy from generation to transmission, and transmission to distribution **(SAS, Mathematica)**

Charles River Associates, Inc.

Senior Associate **1993 - 1998**

As an associate and later as a project manager, performed advanced statistical and econometric analyes for large antitrust litigation and merger cases requiring predatory pricing and price elasticity studies, the measurement of market concentration, and the calculation and comparison of various measures of market power **(SAS)**. Directed the applied econometric analysis of a large ridership forecast project for a multi-billion dollar airport access monorail system in NYC **(SAS)**; conducted the statistical analysis for a capitated price contract between an international pharmaceutical company and a national managed-care organization **(SAS)**; and used a wide range of empirical methods in comparables analyses evaluating non-market transactions in transfer pricing studies.

National Bureau of Economic Research

Research Analyst **1991 - 1992**

Performed statistical analyses and econometric modeling as a labor economics researcher. **(Gauss, SAS)**

Harvard University, John F. Kennedy School of Government

Teaching Assistant, Econometrics, Advanced Section **(TSP)** **Spring, 1992**

Research Assistant, Wiener Center for Social Policy **(SAS)** **Winter, 1991**

PEER REVIEWED PUBLICATIONS

- "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness" *forthcoming*.
- "Bootstraps, Permutation Tests, and Sampling Orders of Magnitude Faster Using SAS®," *forthcoming* in ***Computational Statistics: WIRE Interdisciplinary Reviews***, John Wiley & Sons.
- "OpRisk Capital Estimation and Planning: Exact Sensitivity Analysis and Business Decision Making Using the Influence Function," with Alex Cavallo, in Operational Risk: New Frontiers Explored, Davis. E., ed., Risk Books, London, 2012.
- "Estimating Operational Risk Capital: the Challenges of Truncation, the Hazards of MLE, and the Promise of Robust Statistics," with Alex Cavallo, ***Journal of Operational Risk***, pp.3-90, 7(3), 2012. ORR Innovation Awards **WINNER** – Voted "Paper of the Year" by Operational Risk & Regulation staff in consultation with industry experts.
- "Permutation Tests (and Sampling Without Replacement) Orders of Magnitude Faster Using SAS®," ***InterStat***, January, 2011.
- "Much Faster Bootstraps Using SAS®," ***InterStat***, October, 2010.
- "A Unified Approach to Algorithms Generating Unrestricted and Restricted Integer Compositions and Integer Partitions," ***Journal of Mathematical Modelling and Algorithms***, *Vol. 9*, No. 1, 53-97, March, 2010.
- "A Powerful and Robust Nonparametric Statistic for Joint Mean-Variance Quality Control," ***InterStat***, September, 2009.
- "Comparing Sharpe Ratios: So where are the *p*-values?," ***Journal of Asset Management***, *Vol. 8*, No. 5, Dec., 2007.
- "A Single, Powerful, Nonparametric Statistic for Continuous-data Telecommunications 'Parity Testing'," ***Journal of Modern Applied Statistical Methods***, *Vol. 4*, No. 2, November, 2005.
- "Misuse of the 'modified' *t* Statistic in Regulatory Telecommunications," ***Telecommunications Policy***, *Vol. 28*, No. 11, 821-866, 2004.
- "Fast Permutation Tests That Maximize Power Under Conventional Monte Carlo Sampling for Pairwise and Multiple Comparisons," ***Journal of Modern Applied Statistical Methods***, *Vol. 2*, No. 1, May, 2003.
- "The Use of Regression Techniques in Transfer Price Analysis," with R. Hartman and D. Wright, ***European Taxation***, International Bureau of Fiscal Documentation, TP, Suppl. No. 18, July, 1996.

JOURNAL REFEREE: ***Communications in Statistics – Simulation and Computation***, Taylor and Francis, Inc.;
Quantitative Finance, Taylor and Francis, Inc.;
The American Statistician, American Statistical Association;
Journal of Applied Statistics, Taylor and Francis, Inc.;
Telecommunications Policy, Elsevier Ltd.
Behavior Research Methods, Psychometric Society

PRESENTATIONS

- "Better Capital Planning via Exact Sensitivity Analysis Using the Influence Function," **American Bankers Association: ABA Operational Risk Modeling Meeting**, Washington, DC, July 18-20, 2012.
- "Robust Statistics vs. MLE for OpRisk Severity Distribution Parameter Estimation (with and without truncation)" **ORX Analytics Modeling Forum**, San Francisco, California, September 27-29, 2011.
- "Robust Statistics vs. MLE for OpRisk Severity Distribution Parameter Estimation," **American Bankers Association: ABA Operational Risk Modeling Meeting**, Charlotte, North Carolina, August 10-12, 2011. Discussant: Bakhodir A. Ergashev, Ph.D., Lead Financial Economist, Federal Reserve Bank of Richmond.
- "Bootstraps, Permutation Tests, and Sampling With and Without Replacement Orders of Magnitude Faster Using SAS®," **JSM 2011 – Joint Statistical Meetings**, Miami, Florida, July 30-August 4, 2011.
- "Easily Implemented Confidence Intervals and Hypothesis Tests for Sharpe Ratios Under General Conditions," **JSM 2006 – Joint Statistical Meetings**, Seattle, Washington, August 6-10, 2006.
- "A Nonparametric Statistic for Joint Mean-Variance Quality Control," **JSM 2005 – Joint Statistical Meetings**, Minneapolis, Minnesota, August 7-11, 2005.
- "Misuse of the 'modified' *t* statistic in Regulatory Telecommunications," **JSM 2003 – Joint Statistical Meetings**, San Francisco, California, August 3-7, 2003.
- "Fast Two-Sample Permutation Tests, Especially for Multiple Comparisons and Even When One Sample is Large, That Efficiently Maximize Power Under Conventional Monte Carlo Sampling and Allow for Simultaneous Permutation-Style P-value Adjustments," **MCP 2002 – The 3rd International Conference on Multiple Comparisons**, Bethesda, MD, 8/5-7, 2002.
- "Fast Two-Sample Permutation Tests, Even When One Sample is Large, That Efficiently Maximize Power Under Crude Monte Carlo Sampling," **PharmaSUG 2002** (National Pharmaceutical SAS Users Group), Statistics and Pharmacokinetics – Reporting and Analysis Section, May 5-8, 2002. **Winner – Voted Best Paper**, Statistics and Pharmacokinetics Section.
- Presented before 35 selected members of i) the Public Service Commissions of twelve states, ii) a regulatory research institute with oversight authority, and iii) a telecommunications consulting firm with administrative oversight authority, the executive summary of a 100-page proposal I authored to perform a 13-state telecommunications Operations Support Services performance audit of a Regional Bell Operating Company.
- Presented before 20 representatives of four Regional Bell Operating Companies the statistical foundations, application, and regulatory remedy implications of utilizing permutation tests in telecom OSS performance measurement "parity testing."

PATENTS

- **Fast Two-Sample Permutation Tests**, Patent pending-US2003/0065477 A1, Filing Date: Aug. 30, 2001
  A statistical program for performing fast, multiple two-sample permutation tests, even when one of the samples is large (millions of observations).

PROFESSIONAL ASSOCIATIONS

- American Statistical Association
- American Finance Association
- The Econometric Society
- National Association of Business Economics

OTHER AWARDS / SCORES

- GRE Quantitative: 800
- LSAT: 99th Percentile
- Harvard Book Award
- National Merit Finalist