CRYSTAL T. PIKE
Managing Principal

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Ms. Pike applies her expertise in health economics, statistics, and large administrative claims and transaction-level databases to help resolve complex litigation and strategic business questions in a variety of contexts, including matters involving the False Claims Act, Anti-Kickback Statute, and Controlled Substance Act. She has performed economic analyses and presented findings to U.S. Attorney's Office investigators in numerous cases involving allegations of off-label promotion, kickback, and pricing issues. Ms. Pike also applies economic theory and empirical estimation methods in a variety of product liability, breach of contract, intellectual property, and transfer-pricing engagements. She has extensive experience in developing flexible damages models for real-time use in high-stakes negotiations.

Ms. Pike has been instrumental in developing bespoke suspicious order monitoring programs; building internal analytical programs to assess the risk of theft or diversion; and assisting manufacturers, wholesalers, and pharmacies in responding to government investigations and/or lawsuits related to controlled substance distribution and dispensing. She has managed a range of health care cases involving analysis of future lost profits; economic analysis of physician payment structures under capitation; studies of the cost effectiveness, budget impacts, and direct and indirect costs of illness associated with a variety of diseases; and pricing analyses for large multinational corporations across numerous industries. Ms. Pike has published numerous articles on related topics in health care economics and clinical journals.

EDUCATION

2007	M.B.A., MIT Sloan School of Management
2001	B.A., economics, Mount Holyoke College

PROFESSIONAL EXPERIENCE

2007–Present Analysis Group, Inc.
Managing Principal (2017–Present)
Vice President (2012–2017)
Manager (2009–2011)
Associate (2007–2008)

SELECTED CONSULTING EXPERIENCE

- Performed economic analyses and presented findings to investigators from U.S. Attorney's Offices, Attorneys General, and Department of Justice in numerous cases with allegations of off-label promotion, kickback, pricing issues, and/or improper controlled substance distribution in which violations of Food, Drug and Cosmetic Act, False Claims Act, Controlled Substance Act, and/or Anti-Kickback statute were alleged.

- Developed complex statistical algorithms to identify abnormal prescribing and ordering patterns associated with federally controlled prescription drugs, including custom Suspicious Order Monitoring algorithms consistent with 21 CFR 1301.74(b).
- Used large complex data to conduct economic analyses of pharmaceutical products and other medical treatments and provided strategic assistance to counsel at various key points in litigation, including pretrial discovery, settlement negotiations, and trial preparation.
- Cost-of-illness research related to numerous diseases, as well as assessments of the cost-effectiveness of drugs based on data gathered in clinical trials and administrative claims files.

SELECTED LITIGATION CASE ASSIGNMENTS

- ***Qui tam* cases concerning classes of third party payers and consumers alleging harm resulting from inappropriate marketing and pricing of pharmaceutical products**

  Evaluated alleged conduct, quantified relevant sales, and assessed the causal connection, if any, between allegations in the case and sales at issue, accounting for the unique structure of the pharmaceutical industry and relationships with pharmacy benefit managers (PBMs) and payers. Selected examples of cases include the following:
  - *United States of America ex rel. Alex Booker v. Pfizer*
  - *United States of America ex rel. Beverly Brown v. Celgene*
  - *Painters and Allied Trades v. Forest Pharmaceuticals*

- **Government investigations concerning prescription drug and medical device marketing practices**

  Evaluated alleged conduct, quantified relevant sales, and assessed the causal connection, if any, between allegations in the case and sales at issue using economic, biostatistical, and epidemiologic approaches. Selected examples of cases include the following:
  - AzaSite/Merck (U.S. District Court, Southern District of New York)
  - Rapamune/Pfizer (U.S. District Court, Western District of Oklahoma)
  - Lyrica, Zyvox/Pfizer (U.S. District Court, District of Massachusetts)
  - Bone growth stimulators/Orthofix (U.S. District Court, District of Massachusetts)
  - Detrol LA/Pfizer (U.S. District Court, District of Massachusetts)
  - OP-1, Calstrux/Stryker (U.S. District Court, District of Massachusetts)
  - Protonix/Pfizer (U.S. District Court, District of Massachusetts)
  - Vyvanse, Adderall/Shire (U.S. District Court, District of Massachusetts)
  - Risperdal/Johnson & Johnson (U.S. District Court, Eastern District of Pennsylvania)
  - Zyprexa/Eli Lilly (U.S. District Court, Eastern District of Pennsylvania)
  - Atrovent, Combivent, Aggrenox/Boehringer Ingelheim (U.S. District Court, District of Maryland)
  - Keppra/UCB (U.S. District Court, District of Columbia)
  - Myoview/GE Healthcare (U.S. District Court, Eastern District of Michigan)
  - Lovaza/GlaxoSmithKline (U.S. District Court, Office of the Inspector General)

- **Government investigations concerning distributing and dispensing controlled substances**

  Provided statistical expertise to counsel on rebutting government's proposed causation and damages models. Prepared alternative damages models and presented models to government investigators.

- ***DEA v. Holiday C.V.S., L.L.C., d/b/a CVS Pharmacy #219 and #5195***

  Submitted expert declarations on behalf of CVS in administrative proceedings before the Drug Enforcement Administration. Testimony included attention to dispensing patterns of certain controlled substances.

- **Daiichi Sankyo**

  Support of damages expert in an international arbitration involving allegations of fraudulent representations in a pharmaceutical acquisition

- **Multiple State Attorneys General v. GlaxoSmithKline**

  Provided economic, statistical, and epidemiological consulting support to counsel for GlaxoSmithKline in connection with allegations of improper marketing practices with respect to Avandia.

- ***Onyx Pharmaceuticals, Inc. v. Bayer Corporation, Bayer AG, Bayer Healthcare LLC, and Bayer Schering Pharma AG***

  U.S. District Court, Northern District of California, San Francisco

  Supported economic expert in analyzing future lost profits stemming from breach of contract claims in the area of oncology.

- **Zyprexa Products Liability Litigation**

  U.S. District Court, Eastern District of New York

  Supported multiple economic and statistics experts in assessments of causation and damages as well as cost-effectiveness of Zyprexa.

- ***Grider v. Keystone Healthplan Central et al.***

  U.S. District Court, Eastern District of Pennsylvania

  Supported Defendant's liability expert concerning allegations of improper payment for physician services.

PUBLICATIONS AND PRESENTATIONS

"Tracing the path to health care investigation settlements" with Ken Weinstein and Paul Greenberg, *Law360* (April 17, 2017)

"Viewing recent opioid guidelines in context" with Ken Weinstein, Pavel Darling, and Paul Greenberg, *Law360* (April 1, 2016)

"The economic burden of adults with major depressive disorder in the United States (2005 and 2010)" with Andree-Anne Fournier, Paul Greenberg, Tammy Sisitsky, and Ronald Kessler, *Journal of Clinical Psychiatry*; 76(2):155-162 (2015)

"Confounding factors in off-label drug use," with Paul Greenberg and Tamar Sisitsky, *Health Affairs*; 31(2): 460 (2012)

"Healthcare costs and workloss burden of patients with chemotherapy-associated peripheral neuropathy in breast, ovarian, head and neck, and nonsmall cell lung cancer," with Howard Birnbaum, Catherine Muehlenbein, G.M. Pohl, Ronald Natale, *Chemotherapy Research and Practice*, 2012; 913848

"Changes in utilization and costs for patients with rheumatoid arthritis, 1997 to 2006," with Howard Birnbaum, Ritesh Banerjee, Tracy Waldman, and Mary Cifaldi, *Pharmacoeconomics*, 2012 Apr 1; 30(4): 323-36

"Societal cost of rheumatoid arthritis patients in the U.S.," with Howard Birnbaum, Richard Kaufman, Marya Marynchenko, Yohanne Kidolezi, and Mary Cifaldi, *Current Medical Research and Opinion*, 2010 Jan; 26(1): 77-90

"Employer model of workplace impacts of anti-TNF therapy for rheumatoid arthritis," with Howard Birnbaum, Richard Kaufman, and Mary Cifaldi, *Journal of Occupational and Environmental Medicine*, 2009 Oct; 51(10): 1167-76

"Direct Healthcare and Workloss Burden of Chemotherapy-associated Peripheral Neuropathy in Breast, Ovarian, Head and Neck, and Non-small Cell Lung Cancer," podium presentation at ISPOR 14th Annual International Meeting (May 2009)

"Workplace impacts of anti-TNF therapies in rheumatoid arthritis: Review of the literature," with Howard Birnbaum, L. Shi, Richard Kaufman, P. Sun, and Mary Cifaldi, *Expert Opinion on Pharmacotherapy*. 2009 Feb; 10(2): 255-69

"The economic consequences of irritable bowel syndrome: A U.S. employer perspective," with S.A. Leong, Victoria Barghout, Howard Birnbaum, Rym Ben-Hamadi, F. Frech, and J.J. Ofman, *Archives of Internal Medicine*, 2003 Apr 28; 163(8): 929-35

"Location Savings - A U.S. Perspective," with Steven Allen, Joy Dasgupta, Jessica Rosenbloom, Rahul Tomar, Alden Woodrow, and Deloris Wright, *International Transfer Pricing Journal*, 2004; 11(4)

"United States: Cost Sharing, Services and Intangibles: Recent Changes in Transfer Pricing Regulations," with Nabeel Anwar, Jennifer Droubay, Jessica Rosenbloom, Rahul Tomar, and Deloris Wright, *International Transfer Pricing Journal* 2004; 11(1)