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Dr. Kirson is an applied health economist with extensive experience in health economics and outcomes research (HEOR), strategy and market access, and complex litigation matters. He specializes in the application of advanced statistical methods to the analysis of a variety of real-world and clinical data, as well as the development of advanced modeling tools. He has worked closely with many different stakeholders in the health care industry, including biopharmaceutical and device manufacturers, payers, government agencies, leading law firms, and academic experts. Dr. Kirson has managed numerous HEOR and strategy projects, including novel cost-effectiveness analyses, submissions to health technology assessment (HTA) organizations, the design of outcomes-based contracts, the analysis of pharmaceutical pricing, burden-of-illness studies, comparative-effectiveness research, and budget impact assessments. In the regulatory context, he has supported a successful 510(k) pre-market submission to the US Food and Drug Administration (FDA) on behalf of a medical device manufacturer, including the presentation of statistical analyses to an FDA advisory panel. In litigation, Dr. Kirson's case work has included the evaluation of antitrust matters in the health care sector and the assessment of issues pertaining to the False Claims Act. His work has resulted in numerous conference presentations and peer-reviewed publications in leading journals such as *Nature Reviews Drug Discovery*, *Health Affairs*, *Alzheimer's & Dementia*, and *Diabetes Care*, as well as various pharmacoeconomic journals. He has also published in non-academic outlets such as *Health Affairs Forefront*, *STAT*, and *Law360*. Dr. Kirson served on the board of the ISPOR Boston Regional Chapter, including a term as the Chapter President. He is also a member of the editorial board of the journal *Pharmacoeconomics Open*.

EDUCATION

2008 Ph.D., economics, Harvard University
2002 B.A., philosophy, political science, and economics, Hebrew University of Jerusalem

PROFESSIONAL EXPERIENCE

2008–Present Analysis Group
2017–2023 ISPOR Boston Regional Chapter
 Board Member and Chapter President
2004–2008 Harvard University
 Instructor and Teaching Fellow
2001–2003 Hebrew University Jerusalem
 Teaching Assistant
1992–1999 Israeli Air Force
 Captain

PEER-REVIEWED PUBLICATIONS

Desai U, Gomes DA, Chandler J, Ye W, Daly M, **Kirson N**, Dennehy EB. Understanding the impact of slowing disease progression for individuals with biomarker-confirmed early symptomatic Alzheimer's disease. *Curr Med Res Opin.* 2024 10;40(10): 1719-1725. doi: 10.1080/03007995.2024.2394602. Epub 2024 Sep 1. PMID: 39175422.

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Miloh T, Goldstein A, Howard R, Mogul DB, Marden JR, Anderson A, Gaburo K, **Kirson N**, Rosenthal P. Costs of pediatric liver transplantation among commercially insured and Medicaid-insured patients with cholestasis in the US. *Liver Transpl.* 2023 07 1;29(7): 735-744. doi: 10.1097/LVT.000000000000082. Epub 2023 Feb 8. PMID: 36747344.

Chandler J, Georgieva M, Desai U, **Kirson N**, Lane H, Cheung HC, Westermeyer B, Biglan K. Disease Progression and Longitudinal Clinical Outcomes of Lewy Body Dementia in the NACC Database. *Neurol Ther.* 2023 02;12(1): 177-195. doi: 10.1007/s40120-022-00417-w. Epub 2022 Nov 15. PMID: 36378462.

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J Health Econ Outcomes Res. 2021 11 17;8(2): 82-92. doi: 10.36469/jheor.2021.29488. eCollection 2021. PMID: 35178465.

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Cutler D, Ciarametaro M, Long G, **Kirson N**, Dubois R. Insurance switching and mismatch between the costs and benefits of new technologies. *Am J Manag Care.* 2017 Dec;23(12):750-757. PubMed PMID: 29261241.

Kirson NY, Scott Andrews J, Desai U, King SB, Schonfeld S, Birnbaum HG, Ball DE, Kahle-Wroblewski K. Patient Characteristics and Outcomes Associated with Receiving an Earlier Versus Later Diagnosis of Probable Alzheimer's Disease. *J Alzheimer's Dis.* 2018;61(1):295-307. doi: 10.3233/JAD-170078. PubMed PMID: 29154268; PubMed Central PMCID: PMC5734126.

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Scarpati LM, **Kirson NY**, Zichlin ML, Jia ZB, Birnbaum HG, Howard JC. Drivers of excess costs of opioid abuse among a commercially insured population. *Am J Manag Care.* 2017 May;23(5):276-282. PubMed PMID: 28738684.

Kirson NY, Scarpati LM, Enloe CJ, Dincer AP, Birnbaum HG, Mayne TJ. The Economic Burden of Opioid Abuse: Updated Findings. *J Manag Care Spec Pharm.* 2017 Apr;23(4):427-445. doi: 10.18553/jmcp.2017.16265. Epub 2016 Dec 30. PubMed PMID: 28345440.

Andrews JS, Desai U, **Kirson NY**, Enloe CJ, Ristovska L, King S, Birnbaum HG, Fleisher AS, Ye W, Kahle-Wroblewski K. Functional limitations and health care resource utilization for individuals with cognitive impairment without dementia: Findings from a United States population-based survey. *Alzheimer's Dement (Amst).* 2016 Dec 9;6:65-74. doi: 10.1016/j.dadm.2016.11.005. eCollection 2017. PubMed PMID: 28229124; PubMed Central PMCID: PMC5312554.

Hadjiyianni I, Desai U, Suzuki S, Ivanova JI, Cao D, **Kirson NY**, Chida D, Enloe C, Birnbaum HG, Perez-Nieves M. Basal Insulin Persistence, Associated Factors, and Outcomes After Treatment Initiation: A Retrospective Database Study Among People with Type 2 Diabetes Mellitus in Japan. *Diabetes Ther.* 2017 Feb;8(1):149-166. doi: 10.1007/s13300-016-0215-6. Epub 2016 Dec 2. PubMed PMID: 27913984; PubMed Central PMCID: PMC5306114.

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Kirson NY, Ivanova JI, Birnbaum HG, Wei R, Kantor E, Puenpatom RA, Ben-Joseph RH, Summers KH. Comparing healthcare costs of Medicaid patients with postherpetic neuralgia (PHN) treated with lidocaine patch 5% versus gabapentin or pregabalin. *J Med Econ*. 2010;13(3):482-91. doi: 10.3111/13696998.2010.506176. PubMed PMID: 20684669.

SELECTED CONFERENCE PRESENTATIONS

“Generalized Cost Effectiveness Analysis – From Theory to Practice,” forum moderator, ISPOR Annual International Meeting, Boston, MA (2023)

“Pathways to Innovation in Healthcare: Finding the Right Partners at the Right Time,” panel moderator, MIT Sloan Healthcare and BioInnovations Conference, Cambridge, MA (2018)

“Providers, Payers and Policy Makers Digitizing Population Health Management,” panel moderator, MIT Sloan Healthcare and BioInnovations Conference, Cambridge, MA (2017)

“Time to Treatment Intensification and its Association with Subsequent Macrovascular Outcomes among Patients with Type 2 Diabetes,” with J Kim, U Desai, S King, E Trieschman, M Hellstern, P Hunt, and J Mukherjee, platform presentation, 52nd Annual Meeting, European Association for the Study of Diabetes (EASD), Munich (2016)

“Are Alternative Financing Approaches Needed for Innovative Therapies?” issue panel moderator, ISPOR 21st Annual International Meeting, Washington, DC (2016)

“The Use of ICD-9-CM Diagnosis Codes for Opioid Abuse and Opioid Dependence in Commercial Claims Data,” with A Shei, JB Rice, K Bodnar, AKG Cummings, HG Birnbaum, P Holly, and R Ben-Joseph, platinum medal and platform presentation, Academy of Managed Care Pharmacy Nexus, Boston (2014)

“The Burden of Opioid Abuse among Commercially Insured Patients,” with JB Rice, A Shei, CJ Enloe, AKG Cummings, HG Birnbaum, and R Ben-Joseph, best poster award, ISPOR 19th Annual International Meeting, Montreal (2014)

“Assessing the economic burden of Alzheimer’s disease patients treated by specialists on the date of preliminary diagnosis of cognitive decline,” with U Desai, L Ristovska, AKG Cummings, HG Birnbaum, K Kahle-Wroblewski, W Ye, JS Andrews, and CA Hunter, platform presentation, Alzheimer’s Association International Conference, Copenhagen (2014)

“Excess Costs Associated with Misdiagnosis of Alzheimer’s Disease among US Medicare Beneficiaries with Vascular Dementia or Parkinson’s Disease,” with CA Hunter, U Desai, AKG Cummings, AM San Roman, DE Faries, C Hardwick, and HG Birnbaum, platform presentation, Alzheimer’s Association International Conference, Boston (2013)

See video of presentation at: <https://www.youtube.com/watch?v=UOmjrjCnkqY>

See coverage by CNN.com at: <http://www.cnn.com/2013/07/18/health/alzheimers-warning-signs/>

“The Impact of Study Design in Comparative Effectiveness Research in Schizophrenia,” with BJ Wong, S Yermakov, W Huang, T Samuelson, S Offord, and PE Greenberg, best poster award, 52nd New Clinical Drug Evaluation Unit (NCDEU) Annual Meeting, Phoenix (2012)

“Cost Implications of Early Treatment among Patients with Alzheimer’s Disease – a Medicaid Perspective,” with DS Geldmacher, HG Birnbaum, S Eapen, AKG Cummings, and VN Joish, platform presentation, 64th Annual Meeting of the American Academy of Neurology, New Orleans (2012)

“Pre-Diagnosis Excess Acute Care Costs in Alzheimer’s Patients among a U.S. Medicaid Population,” with DS Geldmacher, HG Birnbaum, E Kantor, S Eapen, VN Joish, platform presentation, Alzheimer’s Association International Conference, Paris (2011)

“Pulmonary Arterial Hypertension Cost of Illness in the U.S. Privately-Insured Population,” with HG Birnbaum, JI Ivanova, M Schiller, T Waldman, T Williamson, best poster award, ISPOR 12th Annual European Congress, Paris (2009)

SELECTED LITIGATION AND STRATEGY CASE WORK

- **Launch pricing for novel therapy in pediatric rare disease**
Conducted research on behalf of a biopharmaceutical manufacturer to inform US launch pricing of a new treatment for a rare pediatric illness. Oversaw research with payers and physicians, formulation of pricing recommendations, and presentation to senior leadership.

- **ICER review of novel gene therapy**
Supported a pharmaceutical manufacturer facing review of a novel gene therapy by the Institute for Clinical and Economic Review (ICER). Assisted in responding to scoping documents, model development plan, and draft report. Developed an independent model to evaluate ICER's findings and provide feedback.
- ***Association of Community Cancer Centers, et al. v. Azar, et al.***
US District Court, District of Maryland
Supported expert declaration on behalf of plaintiffs regarding the economic impacts of the Most Favored Nation (MFN) Rule for prescription drug pricing introduced by the US Department of Health and Human Services. Plaintiffs secured a temporary restraining order to block the Rule.
- ***Merck & Co. Inc., et al. v. US Department of Health and Human Services, et al.***
US District Court, District of Columbia; US Court of Appeals for the District of Columbia Circuit
Supported plaintiffs – three major pharmaceutical companies and the Association of National Advertisers – in blocking Department of Health and Human Services rule requiring disclosure of wholesale drug prices in direct-to-consumer advertising. Supported two expert declarations on the relevance of wholesale prices to consumers and risk of confusion.
- ***Federal Trade Commission v. AbbVie Inc., et al.***
US District Court, Eastern District of Pennsylvania
Supported defendants' economic expert in filing expert reports, deposition testimony, and trial testimony, on issues of market definition and damages related to an alleged sham patent litigation for AndroGel, a topical testosterone replacement therapy.
- **Evaluation of employer-PBM contracting**
On behalf of a major pharmaceutical manufacturer, evaluated landscape trends and potential new market disruption in employer-PBM contracting through a series of in-depth interviews with employers and benefits consultants.
- **Outcomes-based contracting design**
On behalf of a device manufacturer, evaluated potential outcomes-based contracting arrangements to allow the manufacturer to engage in risk sharing with clients and potentially capitalize on cost savings realized from its products.
- **Evaluation of benchmarking methodology for medical claims**
On behalf of a large insurer, reviewed proposed change in benchmarking methodology to determine value for different medical services associated with certain casualty claims. Assessed potential implications for payments made to providers.
- ***United States of America, et al. v. Anthem Inc., et al.***
US District Court, District of Columbia
Supported the US Department of Justice in challenging the proposed Anthem-Cigna merger, including analyses of claims data and evaluation of provider costs. Assisted in the preparation of expert reports and in preparation for deposition and trial.
- ***United States of America v. American Express Company***
US District Court, Eastern District of New York
Supported the US Department of Justice in conducting analyses to assess economic implications of American Express's use of merchant restraints. Assisted in the preparation of expert reports and in preparation for deposition and trial.

- **Government investigations concerning prescription drug marketing practices, including the following:**

- NovoSeven/Novo Nordisk (District of Maryland)
- Remodulin, Tyvaso/United Therapeutics (District of Maryland)

Evaluated alleged conduct, quantified relevant sales, and assessed the causal connection, if any, between allegations in the case and sales at issue.

- ***Drug Mart Pharmacy Corp., et al. v. American Home Products Corp., et al.***

US District Court, Eastern District of New York

Supported defendants, five manufacturers of brand-name prescription drugs, in Robinson-Patman Act claims asserted by 28 individually owned retail pharmacies. Assisted counsel in preparation of motion for summary judgment, including analysis of potential lost customers.

- ***Novell, Inc., v. Microsoft Corp.***

US District Court, District of Utah

Supported damages rebuttal expert in drafting of expert report, preparation for deposition, and preparation for testimony at trial. Assisted counsel in preparing for the testimony of opposing witnesses and experts, both at deposition and at trial.

- **Steward Health Care Hospital acquisition**

Assisted in preparation of white paper analyzing potential anticompetitive concerns in the proposed acquisition of hospitals by the Steward Health Care network.

- ***United States of America, ex. rel. John Underwood v. Genentech, Inc.***

US District Court, Eastern District of Pennsylvania

Supported economic expert in analyzing impact of alleged off-label promotion and payment of kickbacks with respect to Rituxan.

- ***Jim Hood, Attorney General ex rel. State of Mississippi v. Microsoft Corporation***

Chancery Court of Hinds County, Mississippi

Supported primary damages rebuttal expert in drafting of expert report and preparation for deposition. Assisted in developing multiple critiques and rebuttals of opposing experts' causation and damages methodologies and price overcharge calculations.

- **National Football League local revenue index**

Worked with the NFL's Club Business Development group to assess key drivers of local team revenues across a variety of revenue channels, such as ticketing, sponsorship, and local TV/radio. Used statistical models to identify the contribution of different factors to each of the revenue streams, and to project revenues adjusting for factors outside teams' control.

- **Miami Dolphins ticket pricing**

Assisted the Miami Dolphins in improving 2010 season ticket and individual game ticket prices, resulting in increased attendance and revenue.

NON-ACADEMIC PUBLICATIONS

Kirson N, Desai U, Fowler, N. "We need to improve Medicare's annual wellness visit to better detect early dementia." *STAT* (July 20, 2018) <https://www.statnews.com/2018/07/20/detect-dementia-medicare-annual-wellness-visit/>

Ciarametaro M, Long G, Johnson M, **Kirson N**, Dubois R. “Are Payers Ready To Address The Financial Challenges Associated With Gene Therapy?” *Health Affairs Blog* (June 28, 2018)

Kirson N. “Consider Value vs. Budget Impact In Massachusetts Drug Prices.” *Law360* (September 29, 2017) <https://www.law360.com/articles/967163/consider-value-vs-budget-impact-in-mass-drug-prices>

FELLOWSHIPS

- 2007–2008 NBER Pre-Doctoral Fellowship in Aging and Health Economics
- 2007–2008 Harvard/Robert Wood Johnson Research Grant, Harvard School of Public Health (joint with Professor David M. Cutler)
- 2006–2007 National Science Foundation Dissertation Fellowship in Inequality and Social Policy, Harvard Kennedy School
- 2004–2008 Doctoral Fellow, Multidisciplinary Program in Inequality and Social Policy, Harvard Kennedy School

TEACHING EXPERIENCE

- 2007 Teaching Fellow, Political Economics Junior Seminar, Harvard University
- 2005–2007 Teaching Fellow, Social Analysis 10, Harvard University
2007 Allyn Young Award for Excellence in Teaching
2006 and 2007 Harvard University Certificate of Distinction in Teaching
- 2004–2007 Economics Instructor, MPA Mid-Career Summer Program, Harvard Kennedy School
- 2002–2003 Teaching Assistant, Price Theory, Hebrew University Economics Department 2002–
- 2003 Teaching Assistant, Integrative Introduction, PPE program, Hebrew University
- 2001–2002 Teaching Assistant, Introductory Microeconomics and Macroeconomics, Hebrew University Economics Department