

CHEN SONG, Ph.D., CFA

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Dr. Song is an economist, CFA charter holder, and expert witness. Since receiving her Ph.D. in economics from the University of Chicago, she has provided consulting and expert testimony in single-plaintiff, multiple-plaintiff, and class action discrimination disputes. Dr. Song has studied labor market definition and has applied techniques in statistics and econometrics to examine companies' employment practices: hiring, pay, promotion, termination, reduction in force, executive compensation, and pension benefits. Additionally, she has conducted pay equity studies to assist companies with identifying potential gender or minority pay gaps. Dr. Song routinely works with large databases and various types of HR, time reporting, and large-scale transactional databases to help counsel with wage and hour class actions concerning unpaid wages, meal and rest break violations, and employee misclassification. In California wage and hour class actions, she has applied data and statistical analyses to study issues related to class certification, and to calculate potential exposure to assist with mediation.

Dr. Song has been qualified as an expert witness in both Federal and State Courts, and has testified at arbitration and at trial. For over four years, Dr. Song was appointed by the United States District Court as a neutral Technical Advisor, to assist the Court and the Special Master with a complex employment class action, which resulted in a successful settlement that ended more than a decade of litigation.

Dr. Song's statistical and econometric expertise, which she frequently applies to study issues related to class certification and economic damages, includes applying econometric modeling tools, such as conducting statistical tests, performing regression analysis, and drawing statistical inferences based on robust empirical data analyses. Dr. Song's expertise in data analysis focuses on studying the statistical properties of data, making projections, statistical sampling, and the extrapolation of sample estimates to the population. Related to survey data analysis, Dr. Song has offered rebuttal opinions on a proposed choice-based conjoint (CBC) survey in a consumer class action.

Other areas of Dr. Song's expertise include applying complex financial modeling tools, for example stock option valuation, Monte Carlo simulation, event-study, and stress testing in connection with alleged trade secrets misappropriation, accounting fraud, and breach of contract damages calculations.

Dr. Song maintains a strong affiliation with the academic community. She taught courses on labor economics at the University of California, Irvine, and on financial institutions at California State University, Los Angeles. She currently teaches review courses on risk management for the Chartered Financial Analyst (CFA) program.

EDUCATION

Ph.D. (Economics) (2000), University of Chicago
M.A. (Economics) (1995), University of Chicago
B.A. (Mathematics and Economics) (1993), Agnes Scott College

PROFESSIONAL EXPERIENCE

2021 April Senior Vice President of Cirque Analytics
2011 - 2021 Nathan Associates, Inc.
Senior Vice President: 2016 - 2021 April
Vice President: 2013 - 2016
Principal Economist: 2011 - 2013
2006 - 2010 Navigant Consulting, Inc.
Director: 2008 - 2010
Associate Director: 2006 - 2008
2000 - 2005 Resolution Economics, LLC
Senior Economist: 2003 - 2005
Economist: 2000 - 2003
2008 - 2021 Instructor, CFALA Review Program, Level III Risk Management
2007 - 2008 Adjunct Assistant Professor, California State University, Los Angeles
2000 - 2006 Senior Investigator, Center for Population Economics, University of Chicago
2004 Fall Lecturer, University of California Irvine
1992 - 1993 Intern, Federal Reserve Bank of Atlanta

EXPERT REPORTS, TESTIMONY, DECLARATIONS AND PROCEEDINGS (2019 May – Current)

- *Keith Huckaby, et al., v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 2:21-cv-07766-ODW-PD, related to rebuttal damages analysis in a wage and hour class action. Rebuttal expert report filed on May 1, 2023.
- *The State of California, ex rel. Gregory Duncan and Gary Hulbert, v. Sutter Health, et al.*, Case No. RG17846895, related to statistical sampling in connection with fraudulent medical billing claims. Declarations filed on October 10, 2022, October 21, 2022, December 19, 2022, April 13, 2023, and April 24, 2023.
- *Maria Martinez v. Pharmavite, LLC*, Case No. BC671153, related to loss of earnings calculation for a wrongful termination claim. Deposition testimony provided on January 8, 2021. Updated rebuttal analysis provided on February 21, 2023. Trial testimony provided on March 28, 2023.
- *Michele Lewana Evans and Melody Sprouse, et al., v. Downtown Women’s Center*, Case No. 22STCV06578, related to data analysis in a wage and hour class action. Rebuttal expert declaration filed on March 20, 2023.

- *Wade Pyun, Complainant, vs. U.S. Bank National Association, Respondent*, OALJ Case No. 2020-SOX-00023 & OSHA Case No. 9-3290-18-660, related to loss of earnings calculation. Expert report filed on March 9, 2023.
- *Maria Torres v. Southern California Permanente Medical Group, Kaiser Foundation Health Plan, Inc., and Kaiser Foundation Hospitals*, Case No. 19STCV42476, related to rebuttal damages calculation under disability discrimination claims. Rebuttal expert report filed on November 10, 2022.
- *Eric Pierce v. County of Los Angeles, et al.*, Case No. BC675062, related to rebuttal damages calculation under race discrimination claims. Deposition testimony provided on November 1, 2022.
- *Truinject Corp. v. Galderma, S.A., Galderma Laboratories, L.P., Nestlé Skin Health, Inc.*, Case No. 19-00592-VAC-JLH, providing rebuttal opinions to expert survey analysis in connection with allegations of breach of contract, patent infringement, and trade secret misappropriation claims. Rebuttal expert report co-authored with Nancy Mathiowetz, Ph.D., and filed on September 14, 2022.
- *Judy Garcia, Fidel Barrios, and Elyse Allahar, individually, and on behalf of all others similarly situated, v. Cardinal Health, Inc., and Cardinal Health 200, LLC.*, Case No. 37-2019-00068269-CU-OE-CTL, related to data analysis in a wage and hour class action. Expert declaration filed on September 8, 2022.
- *Arthur J. Gallagher & Co., v. Tarantino, et al.*, Case No. 20-cv-05505-EMC, providing rebuttal financial analysis in connection with allegations of breach of contract and misappropriation of trade secrets. Rebuttal expert report filed on April 28, 2022. Deposition testimony provided on August 3, 2022.
- *William M. Dorfman, D.D.S., dba Century City Aesthetic Dentistry v. Patti Cantor, Michael Kosdon, D.D.S., dba Kosdon Cosmetic Dentistry*, Case No. BC602388, related to trade secrets misappropriation and breach of contract claims. Deposition testimonies provided on March 6, 2020 and on April 16, 2022. Trial testimony provided on May 10, 2022 and June 1st, 2022.
- *Margarita Ramirez v. World Oil Corp.*, Case No. 20STCV22351, related to rebuttal damages calculation under disability discrimination claims. Deposition testimony provided on January 24, 2022. Trial testimony provided on April 18 and April 19, 2022.
- *Male Excel Medical, P.A., and Male Excel, Inc. v. Signia Marketing, LTD.*, Case No. A-20-816167-C, related to damages calculations in connection with allegations of fraud. Expert report filed on December 17, 2021.
- *Jeremy Gilmore, et al., v. Vansh, Inc. et al.*, Case No. HG18930348, related to data analysis in a wage and hour class action. Expert declaration filed on December 6, 2021.
- *United States, v. Nancy Zak, Claud Clark III, EcoVest Capital, Inc., Alan N. Solon, Robert M. McCullough, and Ralph R. Teal Jr.*, Case No. 1:18-cv-05774-AT, providing rebuttal financial analysis in connection with allegations of violations of the internal revenue laws related to the donation of conservation easements and deductions claimed related to those easements. Rebuttal expert report filed on November 10, 2021. Deposition testimony provided on January 13, 2022.
- *Jennifer Garcia, et al., v. Central Coast Restaurants, Inc. et al.*, Case No. 3:18-cv-02370-RS, related to data analysis in a wage and hour class action. Rebuttal expert report filed on October 29, 2021.

- *Monica Barnett v. Costco Wholesale Corporation*, Case No. 2:20-cv-04896-ODW-JEMx, related to rebuttal damages calculation in discrimination claims. Rebuttal expert report filed on October 4, 2021.
- *Lauryn Latravia Vargas v. Kaiser Foundation Health Plan, Inc.*, Case No. RIC1906237, related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 28, 2021. Trial testimony provided September 8, 2021.
- *Department of Fair Employment and Housing (DFEH) v. Pathways Community Services, LLC, and Pathways Health and Community Support, LLC*, Case No. 30-2018-01039657-CU-CRCJC), related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 16, 2021.
- *In RE: MacBook Keyboard Litigation*, Case No. 5:18-cv-02813-EJD-VKD, related to rebuttal opinions on proposed choice-based conjoint and repair rate analyses. Rebuttal expert report filed on May 13, 2021. Deposition testimony provided on May 25, 2021.
- *Michael Cash v. County of Los Angeles*, Case No. BC718190, related to rebuttal damages calculation under California Fair Employment and Housing Act (FEHA) claims. Deposition testimony provided on June 10, 2021.
- *An Engineering Design Corporation v. Former CEO/Board Member*, AAA, related to damages calculation under claims of fraud and breach of fiduciary duty. Expert report filed on September 28, 2020. Deposition testimony provided on October 28, 2020. Arbitration testimony provided on April 20, 2021.
- *A California Real Estate Management Firm v. Global Real Estate Investment Company*, JAMS, related to wage and hour matter in connection with an indemnification claim. Arbitration hearing expert witness rebuttal report filed on October 12, 2020. Arbitration hearing testimony provided on November 30, 2020.
- *Paulette Fauceglia v. University of Southern California, et al.*, Case No. 2:19-vcv-04738-FMO-JEM, related to loss of earnings calculation for a wrongful termination claim. Expert report filed on August 10, 2020. Deposition testimony provided on October 2, 2020. Supplemental report filed on October 7, 2020.
- *Elizabeth Cuevas, et al. v. ConAm Management Corporation*, Case No. 3:18-cv-01189-GPC-LL, related to damages calculations on bonus overtime compensation in connection with an FLSA collective action. Expert report filed on August 3, 2020.
- *Juan Carlos Montoya, et al. v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 1:16-cv-10095-PBS, related to class-wide loss calculations in connection with a consumer frauds class action. Expert report filed on July 22, 2020. Deposition testimony provided on August 14, 2020. Rebuttal report related to FLSA collective and Iowa Wage Class claims, and consumer frauds class action, filed on August 21, 2020. Second deposition testimony provided on September 2, 2020.
- *Peter Kleinberg v. Landmark Dividend, LLC, et al.*, Case No. BC675252, related to breach of contract and wrongful constructive discharge damages. Deposition testimony provided on July 23, 2019. Trial testimony provided on November 21, 22, and 25, 2019.
- *Former Employee v. A Power and Renewable Energy Company*, JAMS, related to rebuttal damages calculation for a wrongful termination claim. Rebuttal summary of opinions

provided on August 28, 2019. Deposition testimony provided on September 11, 2019. Arbitration testimony provided on November 20, 2019.

- *Yelter Cruz, et al., v. Gelson's Markets*, Case No. BC670061, related to data analysis in a wage and hour class action. Declaration filed on September 17, 2019. Deposition testimony provided on October 8, 2019.
- *Edward Jordan and De'Wana Hubbard v. City of Los Angeles*, Case No. BC575699, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on September 9, 2019.
- *Berta Sosa v. Comerica Bank, et al.*, Case No. YC071851, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on August 2, 2019.
- *Celina Gamboa, et al., v. Nelson-Miller*, Case No. BC658201, related to data analysis in a wage and hour class action. Declaration filed on April 22, 2019. Deposition testimony provided on May 10, 2019.

SELECT EXPERT WITNESS AND CONSULTING EXPERIENCE

LABOR EMPLOYMENT

Representative assignments in labor employment matters:

- Expert witness services for defendant (a grocery store chain) in a California wage and hour class action alleging meal and rest breaks and rounding claims. Services included rebuttal analysis to plaintiffs' expert's statistical sampling method and calculations.
- Expert witness services for defendant (a trucking company) in an FLSA collective action. Services included rebuttal analysis to damages calculations related to unpaid wage claims.
- Expert witness services for defendant (a university and its affiliated physician practice plan) in a gender discrimination class action. Services included statistical and econometric modeling to assist counsel with opposition to class certification.
- On-going consulting for a large company (a restaurant chain) to audit gender pay equity. Services included statistical and econometric modeling of compensation, and auditing periodic pay adjustments in order to ensure that the company complies with the California Fair Pay Act.
- Expert witness services for defendant (a construction company) in a case involving meal break violations. Services included submitting a declaration explaining statistical sampling, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Expert witness services for defendant (a health club) in a case involving meal break violations for non-managerial hourly employees. Services included analyzing electronic time clock and payroll records, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Consulting services for defendant (a lumber company) in a case involving meal break violations and unpaid overtime. Services included designing and supervising data entry of punch records to reliably capture all relevant information, analyzing punch records and

payroll data, and preparing a summary of risk assessment to assist counsel with mediation.

- Consulting services for defendant (a home healthcare agency) in a case involving unpaid overtime claims. Services included analyzing a sample of time-keeping records and payroll data to assist counsel with mediation.
- Consulting services for defendant (a large grower of herbs) in a case involving meal break violations. Services included reviewing and analyzing time-keeping and payroll files from various time-keeping and payroll systems, in order to assist counsel with mediation.
- Expert witness services for defendant (a restaurant chain) in a class action discrimination case. Services included constructing analytical databases from human resources and payroll data, modeling the promotional process, performing statistical analyses to examine plaintiffs' claim of discrimination in promotion and pay, and assisting counsel with class certification defense.
- Expert witness services for defendant (a hospital) in a single-plaintiff discrimination claim. Services included rebutting opposing expert's lost earnings analysis and estimating economic damages.
- Consulting services for defendant (a pharmaceutical company) in a single-plaintiff wrongful termination claim. Services included rebutting opposing expert's calculation of lost employee stock options awards.
- Consulting services for defendant (a restaurant chain) in a case alleging unpaid time related to the donning and doffing of uniforms. Services included culling over 200 store manager declarations to build an analytical database, summarizing ranges of the donning and doffing time by uniform types, studying variations in the donning and doffing time by store and by shift, and performing statistical analysis to identify factors potentially impacting the donning and doffing time.
- Consulting services for defendant (a regional social services provider) in a case involving meal and rest break violations. Services included designing an observational/time-in-motion study to evaluate plaintiffs' claims that service professionals were not provided opportunities for break during their work days.
- Consulting and expert witness services for defendant (a global defense, security, and aerospace systems company) in a wrongful termination matter alleging race discrimination. Services included evaluating the economic impact of the plaintiff's termination from his employer.
- Consulting and expert witness services for defendant (a restaurant chain) in a case involving meal and rest violations. Services included analyzing large time clock and transactional databases, designing statistical tests to assess the merit of the plaintiffs' claim of a company-wide policy for meal and rest violations, and filing a rebuttal report to assist counsel with a motion opposing class certification.
- Consulting services in connection with reduction in force (RIF). Services included performing adverse impact analysis on gender, race, and age, and critiquing the statistical analysis conducted by an EEOC expert.
- Consulting services in connection with an age discrimination claim brought forth by a sales rep at an investment bank. Services included analyzing compensation, sales and performance rating information for liability assessment, calculating lost earnings, and rebutting opposing expert's damage models.

- Consulting services for defendant in a case involving breach of contract allegation by a high-level executive in the gaming and high-tech industry. Services included estimating damages using information from analyst reports issued by major investment banks, and studying academic peer-reviewed journal articles that formed the basis of opinions on executive compensations in the high-tech industry.
- Consulting services for defendant's counsel in a wage and hours matter alleging uncompensated overtime and missed meal periods for a prospective class of hourly employees at a large transportation company. Services included designing and developing a daily punch-in/punch-out database and hours worked from a large number of electronic records, performing workweek calculation, estimating exposure, penalties, the value of per hour regular pay, per hour overtime pay and per hourly double-time pay, and assisting counsel with mediation.
- Consulting services in connection with research on gender discrimination in pay and promotion at a university. Services included estimating the difference in pay and merit increases by gender, identifying inputs into the compensation and academic award structure, and presenting findings to the faculty.
- Consulting services for the board of trustees in a university system in response to a labor union allegation of gender and racial discrimination in the faculty award policy. Services included statistical analyses of award records.
- Consulting services in several wrongful termination matters. Services included using detailed census and other data to estimate labor market availabilities by geographic location, evaluating job search efforts and mitigation opportunities, constructing financial models to compute economic damages under a variety of scenarios, rebutting opposing expert's analysis, and assisting counsel with cross-examination.
- Consulting and expert witness services for defendant (a large institution for national security) in a case involving an EEOC investigation of gender discrimination in pay and promotion. Services included creating analytical databases from human resource files, employee job application and performance review paper documents, performing statistical tests and regression analyses to study the relationship between productivity-related variables, pay, and gender, and filing declarations to assist counsel with liability assessment.
- Consulting and expert witness services for defendant (a healthcare provider) in a case involving time-shaving, meal, and rest violations. Services included studying daily activity patterns of four types of healthcare workers, designing statistical tests to assess the merit of the plaintiffs' claims that the defendant had adopted a company-wide policy to systematically prune overtime entitled by its employees.
- Consulting services for defendant in connection with an allegation of age discrimination in promotion in a large biotech company. Services included processing large job history data and conducting statistical analyses of employment records.

COMMERCIAL AND CONTRACT DISPUTES

Representative assignments in commercial litigation and breach of contract matters:

- Appointed as the neutral technical advisor by the U.S. District of Kansas in a contract dispute brought by over 30,000 employees at a telecommunications company. Services included assisting the Court with understanding plaintiffs' and defendant's experts' big data analyses and damages calculations.
- Consulting services for plaintiff (a public company specializing in virtualization, cloud computing, and enterprise solutions) in a trade secrets and contract dispute matter. Services included calculating lost profits and unjust enrichment in connection with the alleged unlawful and unfair solicitation, raiding of employees, and theft of trade secrets.
- Expert witness services for plaintiff (an independent insurance agency) in an insurance payment dispute. Services included reviewing and rebutting opposing expert's sampling analysis and damages extrapolation.
- Expert witness services for plaintiff (a large home builder) in a legal malpractice claim related to class certification. Services included statistical sampling and damages calculations.
- Consulting services for plaintiff in a construction defects claim against a builder. Services included estimating, using a hazard model, the life span of pipes installed in certain residential neighborhoods during the class period.
- Consulting services in connection with FINRA (formerly NASD) arbitration in a breach of contract claim from a portfolio manager. Services included evaluating returns to portfolios and calculating lost earnings.
- Consulting services for defendant (a large bank) in a consumer class action. Plaintiffs in the prospective class alleged that the bank's practice of processing debit card transactions from highest to lowest dollar amount resulted in a higher number of overdraft fees assessed on customers' accounts than if debit card transactions were posted in the chronological order that they occurred. Services included critiquing Plaintiffs' expert's data and damage analyses, running alternative but-for scenarios for sampled customers' accounts, and calculating damages.

SECURITIES CLASS ACTION AND FINANCIAL MODELING

Representative assignments in securities class action and financial modeling:

- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.
- Consulting services for defendant (a large broker-dealer company) in connection with a derivative class action suit in which the plaintiffs alleged Section 10b-5 and other violations. Services included employing econometric approach to estimate a range of potential damages per share by taking into account the timing of information releases to the capital markets, and developing a multi-trader model to estimate the number of shares potentially damaged. The multi-trader model was used to account for shareholders' varying propensities to trade, correct for trading volume overstatements caused by market maker and specialist activities, and adjust shares outstanding for short interest, company insiders' beneficial ownership positions, and institutional shares not traded during the alleged fraud period.

- Consulting services for defendant (a high-tech company) in connection with an SEC investigation of options backdating practices. Services included conducting a series of statistical tests on the company stock option grant dates to identify those dates where the short-term return was unusually favorable.
- Consulting services for defendant (a state security entity) in a lawsuit brought forth by a securities trading company alleging \$500 million loss due to reduction in business capacity as a result of the 1993 bombing of the World Trade Center. Services included performing time-series regression models to address the issue of loss causation, calculating damages during the alleged business interruption period, and testing the sensitivity of model outcome by studying various time-to-maturity segments of the traded fixed income securities.
- Consulting services for defendant (an entertainment software company) in a breach of contract case brought by former managers. Services included stock options valuation using a modified version of the Black-Scholes Option Pricing Framework. The modification incorporates a marketability discount arising from sales restrictions and separation risk.

STATISTICAL ANALYSIS AND ECONOMETRIC MODELING

Representative assignments in statistical analysis and econometric modeling:

- Consulting services to determine patent family sample size for essentiality studies.
- Expert witness services on statistical sampling and damages calculations in a malpractice claim in connection with class certification.
- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.
- Applied multi-variate regression analysis using panel data in class action pay discrimination matters. Models controlled for neutral seniority and productivity measures, and accounted for clustering effects.
- Performed one-sample binomial test with Mantel-Haenszel aggregation in class action promotion discrimination matters.
- Identified abnormal stock returns using regression analysis, controlling for market and industry-specific factors, in the context of an event study in securities class actions.
- Designed statistical sampling method and performed damages extrapolation with calculations of confidence interval and error rate.
- Performed regression analysis to project but-for sales, accounting for market condition, time trend, and seasonality.
- Performed regression analysis in the context of a wage and hour class action to identify statistical significance of store-specific characteristics on work-related issues at dispute.
- Applied hazard model in a construction defects claim to estimate the life span of pipes installed in certain residential neighborhoods during the class period.
- Conducted T-test and KS-test to evaluate any difference between two populations, in the context of class actions (for example, comparing relevant characteristics of the deponents with the class members not deposed).

- Conducted Chi-squared test to study any correlation between two variables, in the context of class actions (for example, comparing relevant characteristics of the sampled class members with the rest of the class not sampled).
- Performed adverse impact statistical analysis in class actions alleging discrimination in hiring or in termination.
- Evaluated EEOC experts' statistical and econometric analysis in Reduction-in-Force (RIF) investigations.

HONORS AND RESEARCH GRANTS

Phi Beta Kappa, Elected to Membership 1993

Far East Funding, 1994 - 97

National Institute on Aging, Program Project Grant (Award # P01 AG10120), "Early Indicators of Later Work Levels, Disease and Death", Robert W. Fogel, Principal Investigator. Senior investigator (September 2001 to August 2006)

PROFESSIONAL MEMBERSHIPS

American Economic Association

American Bar Association

Los Angeles Bar Association

Los Angeles Society of Chartered Financial Analysts

Orange County Bar Association

COMMUNITY ACTIVITIES

Governor, Los Angeles Society of Chartered Financial Analysts

Former Board Member (2011 July - 2018 June), Board of Directors of the Los Angeles Center for Law and Justice, a legal-aid organization which provides education and direct representation in housing and family law for low-income communities in East Los Angeles

Former Board Member (2014 - 2016), The State Bar of California, Legal Services Trust Fund Commission, a program responsible for administration of revenue for the benefit of nonprofit legal aid organizations in California