DENIS R. SAURÉ
Department of Industrial Engineering
University of Chile
Beauchef 851, Santiago, Chile.
Phone: +56 2 29784038
Email: dsaure@dii.uchile.cl
Webpage: http://www.dii.uchile.cl/~dsaure/

PROFESSIONAL EXPERIENCE

UNIVERSITY OF CHILE, Department of Industrial Engineering, 2013 – Present.
  Associate Professor 2023- Present
  Assistant Professor 2013-2023

INSTITUTO SISTEMAS COMPLEJOS DE INGENIERIA, 2013 – Present.
  Researcher 2023 - Present
  Associate Researcher 2013-2023.

UNIVERSITY OF PITTSBURGH, Department of Industrial Engineering, Fall 2010-Summer 2013.
  Tenure-track Assistant Professor.

IBM T J WATSON RESEARCH CENTER, Hawthorne, NY, Summer 2009.
  Summer Intern: Dynamic pricing of high-performance computing services in cloud environment.

UNIVERSITY OF CHILE, Industrial Engineering Department, Santiago, Chile, 2003-2005.
  Instructor: responsibilities included teaching undergraduate courses and participating in consulting projects.

EDUCATION

COLUMBIA UNIVERSITY, Graduate School of Business, New York, NY.
  Ph.D., Decisions, Risk, and Operations, 2011.
  M.A., Decisions, Risk, and Operations, 2008.

UNIVERSITY OF CHILE, Santiago, Chile.
  M.A., Operations Management, 2004.
  Industrial Engineer Degree, 2003.
  Bachelor Degree in Industrial Engineering, 2000.

RESEARCH INTERESTS

Stochastic modeling and its applications to service operations and revenue management. Data-driven approaches to decision-making under uncertainty, and their application in the retail industry, on line advertisement, healthcare, and service systems in general.

PUBLISHED PAPERS

1. JP. Torres, L. Basso, D. **Sauré**, M. Zuñiga, M. Farfan, V. De la Maza, N. Campos, M. O'Ryan, "Transdisciplinary research before, during and after COVID-19 vaccination in Chile: A virtuoso collaboration with future perspectives." Frontiers in Public Health, forthcoming, 2024.

2. D. **Sauré**, I. Neira, M. Goic, M. O'Ryan, JP. Torres, A. Bruhn, M. Ferres, J. Angulo-Troncoso, M. Vera, L. Basso, "Infection with SARS-CoV-2 Variant Gamma (P.1) in Chile Increased ICU Admission Risk Three to Five-Fold." **PLoS ONE**, 18(3): e0283085, 2023.

3. A. Gaete-Argel, V. Saavedra-Alarcón, D. **Sauré**, L. Alonso-Palomares, M. Acevedo, M. Alarcón, S. Bueno, Al. Kalergis, R. Soto-Rifo, F. Valiente-Echeverría, C. Cortes, "Impact of Homologous and Heterologous Booster in Neutralizing Antibodies Titers Against SARS-CoV-2 Omicron in Solid-organ Transplant Recipients", **Frontiers in Immunology**, Volume 14, 2023.

4. D. **Sauré**, M. O'Ryan, JP. Torres, I. Neira, M. Zuñiga, R. Soto-Rifo, F. Valiente-Echeverria, A. Gaete-Argel, V. Saavedra, M. Acevedo, C. Archila, F. Acuña, M. rain, L. Basso, "COVID-19 lateral flow IgG seropositivity and serum neutralizing antibody responses after primary and booster vaccinations in Chile: an observational study", **The Lancet Microbe**, 4(3), e149-e158, 2023.

5. L. Basso, M. Goic, M. Olivares, D. **Sauré**, C. Thraves, A. Carranza, G. Weintraub, J. Covarrubias, C. Escobedo, N. Jara, A. Moreno, D. Arancibia, M. Fuenzalida, J. Uribe, F. Zuñiga, M. Zuñiga, M. O'Ryan, E. Santelices, J. Torres, M. Badal, M. Bozanic, S. Cancino, E. Lara, I. Neira, "Analytics Saves Lives During the Covid Crisis in Chile", (*2022 Franz Edelman Award, Winner*). **INFORMS Journal of Applied Analytics**, 53(1), 9-31, 2023.

6. JP. Torres, D. **Sauré**, L. Basso, M. Zuñiga, A. Cazor, M. O'Ryan, "SARS-COV-2 IgG Positivity in Vaccinated and non-vaccinated Chilean Children: A National Cross-sectional Study in Schools." **International Journal of Infectious Diseases**, 121, 89-91, 2022.

7. D. **Sauré**, M. O'Ryan, JP. Torres, M. Zuñiga, E. Santelices, L. Basso, "Dynamic IgG Seropositivity in Chile following rollout of an inactivated SARS-CoV-2 vaccine (CoronaVac) and an mRNA vaccine (BTN162b2): a sentinel surveillance study." **The Lancet Infectious Diseases**, 22(1), 56-63, 2022.

8. L. Basso, V. Salinas, D. **Sauré**, C. Thraves, N. Yankovic, "The effect of Correlation and False Negatives in Pool testing Strategies for COVID-19," **Health Care Management Science**, 25(1), 146-165, 2022.

9. J. Borrero, O. Prokopyev and D. **Sauré**, "Learning in Sequential Bilevel Linear Programming", **INFORMS Journal on Optimization**, 4(2), 125-247, 2022.

10. T. Lagos, M. Armstrong, T. Homen-de-Mello, G. Lagos, D. **Sauré**, "A Framework for Adaptive Open-pit Mining Planning Under Geological Uncertainty", **Optimization and Engineering**, 23, 111-146, 2022.

11. T. Lagos, M. Armstrong, T. Homen-de-Mello, G. Lagos, D. **Sauré**, "Adaptive Open-pit Mining Planing Under Geological Uncertainty", **Resources Policy,** 72, 2021.

12. J. Yang, J. Borrero, O. Prokopyev and D. **Sauré**, "Sequential Shortest Path Interdiction with incomplete Information." **Decision Analysis,** 18(3), 218-244, 2021.

13. G. Durán, F. Gutiérrez, M. Guajardo, J. Marenco, D. **Sauré**, G. Zamorano, "Scheduling the Main Professional Football League of Argentina", *(2020 Daniel H. Wagner Prize Finalist)* **INFORMS Journal on Applied Analytics**, 51(5), 361-372, 2021.

14. H. Zare, O. Prokopyev, D. **Sauré**, "On Bilevel Optimization with Irrational Follower." **Decision Analysis,** 17(1), 74-95, 2020.

15. S. Modaresi, D. **Sauré** and J. P. Vielma, "Learning in Combinatorial Optimization: What and How to Explore," *(JFIG 2013 Paper Competition, Second Prize).* **Operations Research**, 68(5), 1585-1604, 2020.

16. S. Cea, G. Duran, M. Guajardo, **D. Sauré**, J. Siebert, G. Zamorano, "An Analytics Approach to the FIFA Ranking Procedure and the World Cup Final Draw." **Annals of Operations Research**, 286, 119-146, 2020.

17. J. Borrero, O. Prokopyev and D. **Sauré**, "Sequential Interdiction with incomplete Information and Learning." **Operations Research**, 67(1), 72-89. 2019.

18. D. **Sauré**, J. Vielma, "Ellipsoidal Methods for Adaptive Choice-base Conjoint Analysis". **Operations Research**, 67(2). 315-338, 2019.

19. F. Bernstein, S. Modaresi, D. **Sauré,** "A Dynamic Clustering Approach to Data-Driven Assortment Personalization". *(MSOM 2018 Student Paper Competition, First Prize).* **Management Science,** 65(5), 2095-2115, 2019.

20. G. Duran, M. Guajardo, D. **Sauré**, "Scheduling the South American Qualifiers to the 2018 FIFA World Cup by Integer Programming". *(2018 Euro Excellence in Practice Award, Finalist)*, **EJOR**, 262 (3), 1109-1115, 2017.

21. F. Alarcon, D. **Sauré**, A. Weintraub, R. Wolf-Yadlin, G. Zamorano, G. Duran, M. Guajardo, J. Miranda, M. Siebert, S. Souyris, H. Muñoz, L. Ramirez and M. Ramirez, "Operations Research Transforms Scheduling of Chilean Soccer Leagues and South American World Cup Qualifiers" (*2016 Franz Edelman Award, Finalist*). **Interfaces**, 47 (1), 52-69, 2017.

22. R. Caldentey, R. Epstein and D. **Sauré,** "Optimal Exploitation of a Mineral Resource under Stochastic Market Prices." in "Real Options in Energy and Commodity Markets", Chapter 4, 117-171, 2017. World Scientific Publishing Co. Pte. Ltd.

23. J. Borrero, O. Prokopyev and D. **Sauré**, "Sequential Shortest Path Interdiction with incomplete Information." **Decision Analysis,** 13(1), 68-98, 2016.

24. O. Besbes and D. **Sauré**, "Product Assortment and Price Competition under Multinomial Logit Demand." **POMS**, 25(1), 114-127, 2016.

25. A. Khademi, D. **Sauré,** R. Braithwaite, A. Schaefer and M. Roberts, "The Price of Non-abandonment: HIV in Resource-Limited Settings," *(2012 Pierskalla Best Paper Award, Finalist)*. **MSOM**, 17(4), 554-570, 2015.

26. Khademi, S. Braithwaite, D. **Sauré**, A. Schaefer, K. Nucifora and M. Roberts, "Should Expectations about the Rate of New Antiretroviral Drug Development Impact the Timing of HIV Treatment Initiation and Expectation about Treatment Benefits?" **PLoS ONE,** 9(6), 1-8, 2014.

27. Khademi, S. Braithwaite, D. **Sauré**, A. Schaefer, K. Nucifora and M. Roberts, "HIV Treatment in Resource-Limited Environments: Treatment Coverage and Insights." **Value in Health,** 18(8), 1113-1119, 2015.

28. O. Besbes and D. **Sauré**, "Dynamic Pricing Strategies in the Presence of Demand Shifts." **MSOM,** 16(4), 513-528, 2014.

29. D. **Sauré** and A. Zeevi, "Optimal Dynamic Assortment Planning with Demand Learning," *(MSOM 2009 Student Paper Competition, First Prize)*. **MSOM,** 15(3), 387-404, 2013.

30. V. Farias, D. **Sauré** and G. Weintraub, "An approximate dynamic programming approach to solving dynamic oligopoly models," *(JFIG 2009 Paper Competition, Second Prize)*. **The RAND Journal of Economics**, 43(2), 253-282, 2012.

31. D. **Sauré**, A. Sheopuri, H. Qu, H. Jamjoom and A. Zeevi, "Time of Use Pricing Policies for Offering Cloud Computing as a Service." **IEEE SOLI 2010** (conference proceedings).

32. G. Duran, M Guajardo, J. Miranda, D **Sauré**, S. Souyris and A. Weintraub, "Scheduling the Chilean Soccer League by Integer Programming." **Interfaces**, 37(6), 539-552, 2007.

SUBMMITED WORK

33. A. Alvarez, A. Cataldo, G. Durán, M. Durán, P. Galaz, I. Monardo, D. **Sauré**, "Sports Analytics Approach to Simulating the FIFA World Cup Qatar 2022 at 301060.exactas.uba.ar." Submitted for publication.

34. J. Borrero, D. **Sauré**, "Maximum Likelihood Probability Measures over Sets and Applications to Data-Driven Optimization." Submitted for publication.

35. J. Borrero, D. **Sauré**, N. Trigo, "Optimal Sequential Shortest Path Interdiction." Submitted for publication.

36. F. Bernstein, S. Modaresi, D. **Sauré**, "Exploration Optimization for Dynamic Assortment Personalization under Linear Preferences." Submitted for publication.

37. R. Caldentey, F. Castro, R. Epstein and D. **Sauré**, "Optimal Timing of a Multi-stage Project under Market Uncertainty." Submitted for publication.

WORKING PAPERS

38. J. Yang, O. Prokopyev, D. **Sauré,** "Learning in Combinatorial Interdiction with Arbitrary and Unknown Follower Preferences." Working paper.

39. S. Modaresi, D. **Sauré**, "Dynamic Assortment Planning under Consumer Feedback." Working paper.

40. R. Caldentey and D. **Sauré**, "Network Sequencing under Market Uncertainty". Working paper.

41. D. **Sauré**, A. Zeevi and P. Glynn, "A Linear Programming Algorithm for Computing the Stationary Distribution of Semi-martingale Reflected Brownian Motion." Working paper.

TEACHING EXPERIENCE

Probability (Ph.D.), Department of Industrial Engineering, University of Pittsburgh (Fall 2012).

Advanced Stochastic Processes (Ph.D.) Department of Industrial Engineering, University of Pittsburgh (Spring 2013).

Stochastic Processes (Graduate) Department of Industrial Engineering, University of Chile (Spring 2015, 2016, 2019 - Present).

Probability and Statistics for Engineers (Graduate), Department of Industrial Engineering, University of Pittsburgh (Fall 2011).

Engineering management (Graduate), Department of Industrial Engineering, University of Pittsburgh (Spring 2011, 2012, 2013).

Optimization (Undergraduate), Department of Industrial Engineering, University of Chile (Fall 2003, Spring 2015).

Introduction to Operations Research (Undergraduate), Department of Industrial Engineering, University of Chile (Spring and Fall 2004, Spring 2005, Spring 2014 - Present).

Revenue Management Seminar (Graduate), Department of Industrial Engineering (Spring 2016).

FUNDED RESEARCH

D. **Sauré** (PI), F. Ordoñez, "Bilevel Bandits". Fondecyt Regular 2021 (1211407). Amount **funded** CLP$67.6M, April 2021 – March 2024.

D. **Sauré** (PI), "Approximate Dynamic Programming Methods for Adaptive Choice-based Conjoint Analysis". Fondecyt Regular 2018 (1181513). April 2018 – March 2021. Amount **funded** CLP$69.0 M

F. Ordoñez, D. **Sauré** (Subdirector), "Respuesta automatizada para inteligencia en despachos online (RAPIDO). Concurso Idea, FONDEF (IT15|10050). Amount **funded** CLP$149.3M, June 2016 – May 2018.

R.Montoya, D. **Sauré** (Co-PI),"Product Design and Assortment Planning with Non-compensatory Preferences under Competition". Fondecyt Regular 2015 (1151395). Amount **funded** CLP$116.6 M, April 2015 – March 2019.

M. Goic, R. Montoya, D. **Sauré** (Investigador principal), "Desarrollo de Tecnologías para Mejorar la Experiencia de Compra de los Clientes en un Ambiente MultiCanal". Primer Concurso IDeA en Dos Etapas, Fondef (ID14I10388). Amount **funded** CLP$149.1 M, December 2014 – December 2016.

D. **Sauré** (PI), "Dynamic Assortment Personalization with Demand Uncertainty and Consumer Choice". Fondecyt Iniciación 2014 (11140261). Amount **funded** CLP$48.4 M, September 2014 – August 2017.

B. Bidanda, D. **Sauré** (Co-PI) and M. R. Shankar, "Improving Yield Uncertainty in Complex Processes," II-VI Foundation. Amount **funded** USD$100,000, July 2013 – June 2014.

D. **Sauré** (PI) and J. P. Vielma, "Repetitive Combinatorial Optimization with learning," submitted to National Science Foundation (CMMI), October 2011. Amount **funded** USD$260,000, September 2012 – August 2015**.**

D. **Sauré** (PI), Adaptive Reliability and Lifetime Extension of Nuclear Facilities in Uncertain, Dynamic Environments," NRC Young Faculty Development Grant, Senior advisor: Jeffrey Kharoufeh. Amount **funded** USD$100,000, September 2011 – August 2012.

SUPERVISING AND COMMITTEE MEMBERSHIP (Graduate studies only)

Advisor: Constanza Encina Msc 2023, "Detección de estilos de juego en fútbol profesional mediante inferencia bayesiana."

Advisor: Natalia Trigo Msc 2023, "On Sequential Stochastic Shortest Path Interdiction."

Advisor: Simon Grass Msc 2022, "Design and Analysis of a Dynamic IgG Seropositivity Study for COVID-19 Using MIP and Bayesian Inference."

Advisor: Ignasi Neira Msc. 2022, "Infection with SAR-COV-2 Variant Gamma (P.1) in Chile Increased ICU Admission Risk Three to Five-Fold."

Advisor: Sebastian Mena, Msc 2022, "Impacto de los Futbolistas de la Premier League 2017-2018 en la Probabilidad de Salir Campeón a través de un Método de Simulación con Inferencia Bayesiana."

Advisor: Pablo Galaz Msc. 2020, "DatAzul: a first case of analytics applied to professional football in Chile"

Co-advisor (with D. Schwartz): Cristian Aguayo Msc., 2019, "Study on the effect of scheduling on Football tournaments."

Advisor: Diego Bernstein Msc., 2018, "The impact of strategy in the outcome of home-away ties in Soccer."

Co-advisor (with O. Prokopyev): Juan Sebastian Borrero, Ph.D., 2017, currently Assistant Professor at Oklahoma State University

Co-advisor (with A. Schaefer): Amin Khademi Ph.D., **recipient 2012 Bonders Scholarship for Applied Operations in Health Services,** currently Assistant Professor at Clemson University**.**

Advisor: Felipe Carrasco Msc., 2017, "The effect of consumer Feedback on Assortment Planning."

Co-advisor (with R. Montoya): Ignacio Correa Msc., 2017, "Efficient questionnaire design for the elimination by aspects model."

Co-advisor (with G. Duran): Sebastian Cea Msc, 2016, "Quantitative Methods for Ranking Design in Soccer and their application to balanced draft designs for the World Cup."

PATENTS

M. Al-Dawsari, H. Jamjoom, M. Podlaseck, H. Qu, Y. Ruan, D. **Sauré**, Z. Shae, and A. Sheopuri, ``Dynamic Pricing of a Resource." US Patent 8458011 B2, 2013.

S. Modaresi, F. Bernstein, D. **Sauré**, S. Boroujeni, S. Wu, R. Corr, N. Nikolakis, "Quick learning recommendation method, non-transitory computer readable medium and system for baskets of goods." US Patent 11151631, 2019

SERVICE AND ASSOCIATION

Society memberships: Institute for Operations Research and Management Sciences (INFORMS); INFORMS' Revenue Management and Pricing Section, INFORMS'MSOM society; Institute of Industrial Engineering (IIE); Production and Operations Management Society (POMS).

Referee for Manufacturing and Service Operation Management (MSOM), IIE Transactions, Naval Research Logistics, Management Science, Stochastic Systems, Operations Research, Annals of Operations Research, Production and Operations Management, Mathematical Programming B, INFORMS Journal of Computing, Networks.

Reviewer for the 2012, 2013 and 2014 FONDECYT National Research Funding Competition of the Chilean National Commission for Scientific and Technological Research (CONICYT)

Session Chair for: INFORMS RM&P Conference 2011, New York, NY; INFORMS conference 2011, Charlotte, NC (RM&P section); POMS Conference 2012, Chicago, IL; 2016 CLAIO, Santiago, Chile; INFORMS conference 2016, Nashville.

CONFERENCE PRESENTATIONS AND INVITED TALKS (academic, presenting author)

Information Traps for Consumer Learning in Assortment Planning
>   Revenue Management and Pricing Conference, July 2023, London, UK.

Exploration Optimization for Dynamic Assortment Personalization under Linear Preferences
>   University of Zurich, March 2023

Optimal Exploration in Learning of Combinatorial Problems
>   Pontificia Universidad Católica, November 2022

Analytics Saves Lives During the COVID Crisis in Chile
>   INFORMS Analytics conference, April 2022, Houston, FL.
>   INFORMS conference, November 2022, Indianapolis, IN.
>   10+ other instances…

Operations Research Transforms the Scheduling of Chilean Soccer Leagues And South American World Cup Qualifiers
>   INFORMS Analytics conference, April 2016, Orlando, FL.
>   INFORMS conference, November 2016, Nashville, TN.

Ellipsoidal Methods for Adaptive Choice-Based Conjoint Analysis
 University of Pittsburgh, February 2020, Pittsburgh, PA.
 CLAIO conference, October 2016, Santiago, Chile.
 INFORMS conference, November 2015, Philadelphia, PA.
 INFORMS conference, November 2016, Nashville, TN.

Dynamic Clustering and Assortment Personalization
 INFORMS conference, October 2013, Minneapolis, MI.

Network Sequencing under Market Uncertainty
 INFORMS conference, October 2013, Minneapolis, MI.

Learning and Computation in Sequential Combinatorial Optimization
 INFORMS conference, November 2011, Charlotte, NC.
 Penn State University, November 2012, State College, PA.
 Carnegie Mellon University, February 2013, Pittsburgh, PA.
 INFORMS conference, October 2013, Minneapolis, MI.
 Universidad de Buenos Aires, September 2014, Buenos Aires, Argentina.

Assortment and Pricing Competition under Multinomial Logit Demand.
 INFORMS conference, November 2010, Austin, TX.
 INFORMS conference, November 2011, Charlotte, NC.
 MSOM conference June 2011, Ann Arbor, MI.
 Economics/Operations Workshop (University of Chile), December 2011, Santiago Chile.

Dynamic Pricing in Presence of Demand Shocks
 INFORMS RM&P conference, June 2011, New York, NY.
 INFORMS conference, November 2011, Charlotte, NC.
 Katz Graduate School of Business, April 2013, University of Pittsburgh, PA.
 Pricing and RM Workshop, UDT, May 2014, Buenos Aires, Argentina.

Optimal Learning in Display-based Online Advertisement.
 INFORMS conference, October 2009, San Diego, CA.
 London Business School, March 2012, London, UK.
 Ross School of Business, Kellogg School of Management, Stanford GSB, Stern School of Business, Hass School of Business, IE department U. Pittsburgh, The Wharton School, Marshall School of Business and Booth School of Business (December 2009-February 2010).
 Economics/Operations Workshop (University of Chile), December 2010, Santiago Chile.

Optimal Dynamic Assortment Planning.
 INFORMS conference, October 2009, San Diego, CA.
 INFORMS conference, October 2008, Washington D.C.
 MSOM conference June 2009, Cambridge, MA.

A Linear Programming Algorithm for Computing the Stationary Distribution of Semi-martingale Reflected Brownian Motion.
 INFORMS conference, October 2007, Seattle, WA.

Services Cloud Pricing: Dynamic Pricing of Computing Resources for a Reservation System.
 INFORMS conference, October 2009, San Diego, CA.

Competing for Scarce Capacity with Advance Purchasing Orders.

INFORMS conference, October 2007, Seattle, WA.

The Linear Programming Approach to Solving Large Scale Dynamic Stochastic Games.
INFORMS conference, October 2008, Washington DC.

HONORS

Winner 2022 Franz Edelman Award (for "Analytics Saves Lives During the Covid Crisis in Chile")

Finalist 2020 Daniel H. Wagner Price for Excellence in the Practice of Advanced Analytics and Operations Research (for "Scheduling the Main Professional Football League of Argentina").

First Prize MSOM 20018 Student Paper Competition ("A Dynamic Clustering Approach to Data-Driven Assortment Personalization"), as **co-author** (awarded to Sajad Modaresi, student).

Finalist 2018 Euro Excellence in Practice Award (for "Scheduling the South American Qualifiers to the 2018 FIFA World Cup by Integer Programming").

Finalist 2016 Franz Edelman Award (for "Operations Research Transforms Scheduling of Chilean Soccer Leagues and South American World Cup Qualifiers").

Second Prize JFIG 2013 Paper Competition ("Learning in Combinatorial Optimization: What and How to Explore").

Finalist 2012 Pierskalla Best Paper Competition ("Epidemic Control under Resource Constraints: HIV in Sub-Saharan Africa").

First Prize MSOM 2009 Student Paper Competition ("Optimal Dynamic Assortment Planning").

Second Prize JFIG 2009 Paper Competition ("The Linear Programming Approach to Solving Large Scale Dynamic Stochastic Games").

INFORMS Doctoral Colloquium, 2009.

Doctoral Fellowship, Graduate School of Business, Columbia University, 2005-2009.

Best Lecturer Award, Industrial Engineering Department, University of Chile, 2004.

Best Teaching Assistant Award, Industrial Engineering Department, University of Chile, 2002 and 2003.

Grant for graduate studies (M.A., U. of Chile) CONICYT (NSF equivalent) 2002 and 2003.

Dean's List, School of Engineering (top 5%), University of Chile, 1996-2002.

Academic Excellence Fellowship for score in P.A.A. (top 2%, SAT equivalent), School of Engineering, University of Chile, 1996.

REFERENCES

Available upon request.