

DILARA SONMEZ LESNIAK

Ph.D. Candidate · Operations Research · Healthcare Analytics

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Authorized to work in the U.S. • No visa sponsorship required

EDUCATION

University of Chicago, Booth School of Business

Ph.D., Management Science & Operations Management

M.B.A.

Dissertation: *Optimizing Primary Care Visit Patterns and Panel Design*. Advisor: Prof. Daniel Adelman

Chicago, IL, USA

Expected Fall 2026

Expected Fall 2026

Bilkent University, Faculty of Engineering

M.S., Industrial Engineering (GPA 3.88/4.00)

B.S., Industrial Engineering (Ranked 3 of 187)

Ankara, Türkiye

August 2021

June 2019

PUBLICATIONS & WORKING PAPERS

Published: Sonmez D, Weyer G, Adelman D. Primary Care Continuity, Frequency, and Regularity Associated With Medicare Savings. *JAMA Network Open*. 2023;6(8):e2329991. doi:10.1001/jamanetworkopen.2023.29991

Working papers:

- Sonmez D, Weyer G, Adelman D. Reconfiguring Primary Care Resources for Clinical and Financial Success in Value-Based Care
- Sonmez D, Adelman D. Recovering the Cost of Visit Frequency from Dynamic Choice and Health Transition

DOCTORAL RESEARCH

Dissertation, "Optimizing Primary Care Visit Patterns and Panel Design"

Advisor: Prof. Daniel Adelman • Healthcare Analytics Lab, University of Chicago Booth. A three-part program linking empirical evidence, optimization, and structural estimation to help accountable care organizations (ACOs) succeed under value-based care

I. Primary-care visit patterns and Medicare savings (empirical; published in JAMA Network Open)

- Constructed a retrospective cohort of 504,471 Medicare fee-for-service beneficiaries from a nationally representative 5% claims sample; engineered novel visit-pattern metrics: frequency, temporal regularity (coefficient of variation), and a continuity measure
- Risk-adjusted outcomes with CMS methodology and gamma generalized linear models with fixed effects; proactive (regular, highly continuous) care was associated with 176% greater savings, 16.6% lower risk-adjusted expenditures, 40.5% fewer ED visits, and 53.3% fewer hospitalizations (all $P < .001$)
- Uncovered concave savings-frequency relationships with risk-dependent optimal visit frequencies (peak savings near ten visits/year for higher-complexity patients)

II. Reconfiguring primary-care resources for value-based care (optimization)

- Built a framework to embed primary-care visit patterns as *decision variables* in a resource-constrained optimization, jointly optimizing with physician panels, hiring, and capacity to maximize ACO financial success under two-sided MSSP contracts
- Modeled physician availability with a queueing model with abandonment and cast hiring as fixed-charge facility location with nonlinear, coupled assignment benefits (mixed-integer nonlinear program)
- Developed a segment-based aggregation with an LP-integral (totally-unimodular) matching step that cut solve time at a small optimality gap; applied to UChicago Medicine to redesign staffing and panels against continuity targets

III. Recovering the cost of visit frequency (structural estimation)

- Developed the first structurally estimated semi-Markov physician-scheduling model with a continuously-evolving latent health-risk process, formalizing the trade-off between visit burden now and emergency risk later
- Represented latent health as Brownian motion (log-odds scale) with geometric time-to-emergency and Gumbel scheduling shocks; derived transition kernels, conditional choice probabilities, and equilibrium (fixed-point) constraints

- Estimated structural parameters via maximum likelihood with equilibrium constraints (MPEC); confirmed exact parameter recovery on ~499,000 transitions in simulation; fed recovered cost curves into the panel-optimization model for Geisinger's Medicare Advantage patients

MASTER'S THESIS

"Manufacturing Assortment Optimization"

Advisors: Prof. Alper Sen, Prof. Savas Dayanik

- **Industry client engagement:** a multinational tire manufacturer brought the problem and their data; I owned the modeling and implementation end to end under advisor supervision, with weekly client meetings. Balanced product variety against sales under demand and complexity-cost constraints
- Estimated demand-substitution probabilities from incomplete data using an Expectation-Maximization algorithm; estimated complexity costs of assortment subsets with machine learning; solved a large-scale assortment optimization. Tools: R, PostgreSQL. [thesis]

PROFESSIONAL & TEACHING EXPERIENCE

Research Assistant and Project Lead, Healthcare Analytics Lab

Present

University of Chicago, Booth School of Business

Chicago, IL

Build optimization and machine-learning models on terabyte-scale national CMS/Medicare claims data (SQL, R, Python, Dataiku DSS) in partnership with UChicago Medicine and Geisinger. **Led two quarter-long MBA project teams** as end-to-end consulting engagements: owned the client relationship through weekly stakeholder meetings to define needs and arrange data access, built the datasets and project blueprint before the quarter, managed timeline and deliverables, contributed the modeling, coached teammates from non-technical backgrounds, and presented results to stakeholders and their C-suite

Teaching Assistant

December 2024

University of Chicago, Booth School of Business

Chicago, IL

Healthcare Data for Researchers (PhD-level), *Healthcare Business Analytics*, and the *Healthcare Analytics Lab*, guided students working with large real-world CMS datasets and collaborative data-science tooling

Teaching Assistant, Pricing and Revenue Optimization

June 2021

Bilkent University

Ankara, Türkiye

Taught the graduate pricing and revenue optimization course for three semesters: price-demand estimation, pricing under constrained supply, price differentiation, customized and dynamic pricing, markdown management, revenue management, network revenue management, and overbooking. Also teaching assistant for *Production Planning*

Consulting Intern

September 2018

Peppers & Rogers Group

Istanbul, Türkiye

Customer-experience and website-capability engagements for media and energy clients

Product Management Intern

August 2018

Türkiye İş Bankası

Istanbul, Türkiye

Process design and optimization for point-of-sale (POS) delivery to businesses

Production Intern

July 2017

Pi Makina

Ankara, Türkiye

Time-study analysis of manufacturing processes; job-shop layout design

TECHNICAL SKILLS

Programming & Query: Python, R, SQL, MATLAB, Java, VBA

Optimization & Modeling: AMPL, mixed-integer & nonlinear programming, dynamic programming, queueing, discrete-event simulation (Arena)

Machine Learning & Statistics: causal inference, structural estimation, survival analysis, generalized linear models, predictive modeling

Data & Platforms: Dataiku DSS, PostgreSQL, terabyte-scale CMS/Medicare claims data

LANGUAGES & INTERESTS

Languages: English (Full Professional Proficiency) • Turkish (Native) • French, Italian (Basic)

Interests: Cooking • Playing the drums