

## Margrét V. Bjarnadóttir

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### Education

- 2002 – 2008 **Massachusetts Institute of Technology**, Cambridge, MA  
Ph.D. in Operations Research.  
Thesis title: Data-Driven Approach to Health Care - Applications Using Claims Data.
- 1998 – 2001 **University of Iceland**, Reykjavik, Iceland  
B.Sc. Mechanical and Industrial Engineering.  
Achieved the highest GPA ever recorded by an engineering student in Iceland.
- 1997 – 1998 **Oglethorpe University**, Atlanta, GA  
A one-year study abroad in math, physics and photography.

### Academic Appointments

- 2012 – **Robert H. Smith School of Business - University of Maryland**, College Park, MD  
Assistant Professor of Management Science and Statistics.
- 2011 – 2012 **Robert H. Smith School of Business - University of Maryland**, College Park, MD  
Visiting Assistant Professor of Management Science and Statistics.
- 2008 – 2010 **Stanford Graduate School of Business**, Stanford, CA  
Acting Assistant Professor of Operations, Information & Technology.

### Peer Reviewed Publications

- David Anderson, Margrét V. Bjarnadóttir, Cristian Dezso and David Ross. “On a Firms Optimal Response to Pressure for Gender Pay Equity”, to appear in *Org Science*.
- Margrét V. Bjarnadóttir, David Anderson, Leila Zia and Kim Rhods. “Predicting Colorectal Cancer Mortality: Models to Facilitate Patient-Physician Conversations and Inform Operational Decision Making”, to appear in *POMS*.
- Sean Barnes and Margret V. Bjarnadottir. “Baseball Analytics: Advancing to Prescriptive Analytics in the Major League Baseball Front Office”, to appear in *INFORMS Transactions on Education*.
- Al Nelson, Margrét V. Bjarnadóttir, Vickee Wolcott and Ritu Agarwal. “Stated Pain Levels, Opioid Prescription Volume and Chronic Opioid Use among United States Army Soldiers”, to appear in *Military Medicine*.
- Wenchang Zhang, Margret V. Bjarnadottir, Ruben Proano, Renata Konrad, and David Anderson. 2018. “Accelerating the Adoption of Bundled Payment Reimbursement Systems: A Data-Driven Approach Utilizing Claims Data”, *IIE Transactions on Health Care Systems*, 8(1), 22-34.

Margrét V. Bjarnadóttir, Eberechukwu Onukwugha and David Czerwinski. 2018. “Sensitivity of the Medication Possession Ratio to Modeling Decisions in Large Claims Databases”. *PharmacoEconomics*, 36, 369-380.

Summer Hu, Sean Barnes, Margret Bjarnadottir and Bruce Golden. 2017. “Intelligent Selection of Frequent Emergency Department Patients for Case Management: A Machine Learning Framework Based on Claims Data”. *IIE Transactions on Health Care Systems*, 7(3), 130-143.

David Anderson and Margrét V. Bjarnadóttir. 2016. “When Is An Ounce Of Prevention Worth A Pound Of Cure? Identifying High-Risk Candidates for Case Management”. *IIE Transactions on Health Care Systems*, 6(1), 22-32.

Sean Barnes and Margrét V. Bjarnadóttir. 2016. “Great Expectations: An Analysis of Major League Baseball Free Agent Performance”. *Statistical Analysis and Data Mining*, 9(5), 295-309.

Margrét V. Bjarnadóttir, Sana Malik, Eberechukwu Onukwugha, Tanisha Gooden, and Catherine Plaisant. 2016. “Understanding Prescription Patterns Using Visualization of Large Scale Claims Data”. *PharmacoEconomics*, 34(2), 169-79.

Sigrídur Benedíksdóttir, Margrét V. Bjarnadóttir and Gudmundur Axel Hansen. 2016. “Large Exposure Estimation through Automatic Business Group Identification”. *Annals of OR*, 247(2), 503-521.

Sean Barnes, Margrét V. Bjarnadóttir and Xue Guo. 2016. “Centers for Medicare and Medicaid Services Provider Characteristics Fail to Explain Billing Variability”. *Health Systems*, 5(2), 109-119.

Sana Malik, Ben Shneiderman, Catherine Plaisant, Fan Du and Margret V. Bjarnadottir. 2016. “High-Volume Hypothesis Testing: Systematic Exploration of Event Sequence Comparisons”. *ACM Transactions on Interactive Intelligent Systems*, 6(1).

Joel Goh, Margrét V. Bjarnadóttir, Mohsen Bayati and Stefanos A. Zenios. 2015. “Active Postmarketing Drug Surveillance for Multiple Adverse Events”. *Operations Research*, 63(6), 1528-1546.

Dimitris Bertsimas, Margrét V. Bjarnadóttir, Michael A. Kane, J. Christian Kryder, Rudra Pandey, Santosh Vempala, Grant Wang. 2008. “Algorithmic Prediction of Health Care Costs”. *Operations Research*, 56(6), 1382-1392.

## Peer Reviewed Book Chapters

Margrét V. Bjarnadóttir, David Czerwinsky and Yihan Guan. 2016. “The History and Modern Applications of Insurance Claims Data in Health Care Research”, in *Healthcare Data Analytics*, 523 - 553, H. Yang and E. K. Lee editors.

Margrét V. Bjarnadóttir and David Czerwinski. 2013. “Active Vaccine and Drug Surveillance: Towards a 100 Million Member System”, in *Operations Research and Health Care Policy*, 251-279, G. Zaric editor.

## Other Book Chapters

Margrét V. Bjarnadóttir, Ritu Agarwal, Kenyon Crowley, QianRan Jin, Leila Zia, Sean Barnes, Kislaya Prasad. 2014. “Improving Decision-making Using Health Data Analytics”, in *Big Data and Health Analytics*, 285-304, K. Marconi and H. Lehmann editors.

## Submitted Journal Articles

Margrét V. Bjarnadóttir and Leila Zia. *The Optimal Intervention Policy: The Combination of Risk Modeling and Cost-Effectiveness*. 3rd R&R at MSOM.

Margrét V. Bjarnadóttir and Yihan Guan. *Follow the money: Monitoring Costs for Drug Surveillance*. R&R at IIE Transactions on Health Care Systems.

Renata Konrad, Wenchang Zhang, Margret V. Bjarnadottir, Ruben Proano. *Managing big data: Experiences using health insurance claims data in a research project*, Resubmitted to Health Systems.

Louiqa Raschid, Zheng Xu, Margret Bjarnadottir. *Probabilistic Community Models to Understand Financial Supply Chains*. Submitted to ISR.

Weiguang Wang, Margret Bjarnadottir, Gordon Gao . *Deep-Learning- based Approach for Precise Health Cost Prediction*. Submitted to ISR as a technical note.

Margrét V. Bjarnadóttir, David Anderson, Ritu Agrawal, and Al Nelson. *Aiding the Prescriber: Risk Modeling for Chronic Opioid Use*. Submitted to ISR.

## Other Peer Reviewed Abstracts and Proceedings

Margrét V. Bjarnadóttir, Aaron Hunt and Louiqa Raschid. “Choosing Models to Explore Financial Supply Chain Relationships”. *Proceedings to DSMM 2018*.

Sigrídur Benedíksdóttir and Margrét V. Bjarnadóttir. “Large Exposure Estimation through Automatic Business Group Identification”. *Proceedings to DSMM 2014*.

David Anderson and Margrét V. Bjarnadóttir. 2013. “Does it get any Better? Upper Bounding Classification Performance”. *Proceedings to the 8th Informs workshop on Data Mining and Health Informatics*.

Sean Barnes and Margrét V. Bjarnadóttir. 2013. “The Composition of Sticker Prices: An Analysis of CMS Provider Charge Data”. *Proceedings to the 8th Informs workshop on Data Mining and Health Informatics*.

Margrét V. Bjarnadóttir, Kim Rhoads and Leila Zia. 2012. “A Comprehensive Study of Prediction Models for Colorectal Cancer”. *Proceedings to the 7th Informs workshop on Data Mining and Health Informatics*

Michael A. Kane, Margrét V. Bjarnadóttir, Sanjay Ghimire. 2012. “Study of compliance in hypertension treatment” *American Society of Hypertension, Annual Scientific Meeting*. Poster Presentation, New York, NY, May 2012.

Margrét V. Bjarnadóttir and Yihan Guan. 2011. “Behavior of Liver Disease Diagnoses in a Population-Based Healthcare Insurance Claims Database”. *Proceedings to the 6th Informs workshop on Data Mining and Health Informatics*.

Margrét V. Bjarnadóttir and Yihan Guan. 2010. “Statistical Trade-offs in Drug Surveillance Systems”. *Proceedings to the 5th Informs workshop on Data Mining and Health Informatics*.

Margrét V. Bjarnadóttir, Bijay Ghimire, Sanjay Ghimire, Michael A. Kane, J. Christian Kryder. 2006. "Analysis of Health care Claims Data for Patients Taking COX-1 and COX-2 Anti-Inflammatory Drugs". *American College of Rheumatology Annual Scientific Meeting*. Poster Presentation, Washington, DC, November 2006.

## Other Publications

Eberechukwu Onukwugha, Margret Bjarnadottir and Shujia Zhou. Visualizing Data for Hypothesis Generation Using Large-Volume Claims Data, *Value & Outcomes Spotlight*, January/February 2017.

Margrét V. Bjarnadóttir. Book review of Applying Analytics. *The American Statistician*, 68(2), p. 117.

Margrét V. Bjarnadóttir and Gudmundur A. Hanssen. 2010. Cross-Ownership and Large Exposures; Analysis and Policy Recommendations. *Report of the Special Investigation Commission*, Volume 9.

## Manuscripts in Preparation

David Anderson and Margrét V. Bjarnadóttir. *As Good as it Gets? An Upper Bound Methodology*. Target journal: OR as a technical note.

David Anderson, Margrét V. Bjarnadóttir, Cristian Dezso and David Ross. *Differential Influence: Impact of Changes in Regressands on Regression Coefficients*. Target Journal: Journal of Business and Economic Statistics.

Sean Barnes, Margrét V. Bjarnadóttir and Aurilie Thiele. *A Unified Approach to Athlete Selection*. Target journal: Management Science.

Kislaya Prasad, Ritu Agrawal, Margrét V. Bjarnadóttir, David Anderson, and Al Nelson. *The Value of Moderating Clinician Behavior in Opioid Prescribing: Evidence from a Simulation Model*. Target journal: POM.

David Anderson, Margrét V. Bjarnadóttir, Cristian Dezso and David Ross. *The Analytical Approach to Demographic Pay Gaps*. Target journal: OR.

Laura Pimentel, Ai Ren, Bruce Golden, Frank Alt, Margret Bjarnadottir, Edward Wasil, Jon Mark Hirshon. *The Impact of Global Budget Revenue Policy on Emergency Department Efficiency in the State of Maryland*. Target Journal: Journal of Emergency Medicine

## Research Presentations

*Addressing The Gender Paygap With Analytics*

Danmarks Tekniske Universitet, Kobenhagen, Denmark, October 2018

INFORMS Analytics Conference, Las Vegas NV, April 2017

*Sounding the Alarm on Opioids* and similar

CHITA Annual Conference, Washington, DC, October 2018

Webinar, April 2018

POMS Annual Meeting, Houston, TX, May 2018

The Sixth Annual Robert H. Smith School of Business and IBM Business Analytics Workshop. College Park, MD, November 2017

*Patient Choice and Colorectal Cancer Mortality*  
POMS Annual Meeting, Houston, TX, May 2018

*Bridging the Gap: Optimal Responses to Equal Pay Legislation* and similar  
2nd Smith Analytics Conference, Washington DC, April 2018  
POMS Annual Meeting, Seattle WA, May 2017  
INFORMS Annual Meeting, Nashville, TN, November 2016

*A Predictive Modeling And Robust Optimization Framework For Prioritizing Major League Baseball Free Agent Acquisitions*  
INFORMS Annual Meeting, Nashville, TN, November 2016

*Identifying Impactable High-Risk Diabetes Patients* and similar  
INFORMS Annual Meeting, Nashville, TN, November 2016  
INFORMS Annual Meeting, Philadelphia, PA, November, 2015  
POMS Annual Meeting, Washington DC, May 2015.  
Informs Annual Meeting, San Francisco, November 2014.

*Data Driven Approach to Bundled Payments*  
Informs Annual Meeting, Philadelphia, PA, November, 2015

*Discovering the Moneyball effect, a case presentation*  
Informs Annual Meeting, Philadelphia, PA, November, 2015

*Data-Driven Health Care* and similar  
OTIM Research Camp, Johnson School of Business, Cornell University, Ithaca, NY, June 2015.  
The Joint University of Maryland/IBM workshop on Healthcare Analytics, College Park, MD, May 2012.  
INFORMS Practice Meeting, Orlando, FL, April 2010.  
Guest lecture Reykjavik University, Reykjavik, Iceland, October 2009.

*Understanding Temporal Patterns in Drug Therapy* and similar  
Informs Annual Meeting, Philadelphia, PA, November, 2015  
Informs Annual Meeting, San Francisco, November 2014.

*Large Exposure, Systemic Risk and Regulatory Arbitrage* and similar  
POMS Annual Meeting, Washington DC, May 2015.  
Informs Annual Meeting, San Francisco, November 2014.  
DSMM 2014, Snowbird UT, June 2014.  
Back from the dust: Rise, Fall and Rebirth of a Financial Market, Nordic Company Law Network Seminar, Reykjavik, Iceland, August 2011.  
Invited lecture, The Icelandic Financial System Authority, Reykjavik Iceland, September 2011.

*Optimal Intervention Methodologies in Health Care Systems*  
City University New York, April, 2015.  
Lehigh University, ISE department seminar, October 2014.  
Health Care Special Interest Group, MSOM, Seattle, June 2014.  
Informs Healthcare, Chicago, IL, June 2013.  
POM 2013, the Twenty Fourth Annual Conference, Denver, CO, May 2013.

*The Analytics of Drug-Surveillance Systems* and similar  
Pharmaceutical Health Services Research Seminar. University of Maryland School of Pharmacy, Baltimore, MD, April 2014.

INFORMS Annual Meeting, Austin, TX, November 2010.

*Charges and Sticker Prices; A Story of Unexplained Variance*  
WHITE 2013, Washington DC, November 2013.

*Comprehensive Colorectal Cancer Mortality Prediction Models*  
INFORMS Annual Meeting, Minneapolis, MN, October 2013.

*Upper Bounding Classification Performance*  
The 8th Informatics workshop on Data Mining and Health Informatics, Minneapolis, MN, October 2013.

*Drug-Surveillance Design / Robust Drug Surveillance*  
Engineering System Division, MIT, Cambridge, MA, February 2010.  
London Business School, London, England, February 2010.  
Robert H. Smith School of Business, University of Maryland, College Park, MD, January 2010.  
CORS/INFORMS Joint International Meeting, Toronto, Canada, June 2009.  
Workshop in Biostatistics, Stanford University, Stanford, CA, May 2009.

*Call Center Planning*  
Guest lecture Reykjavik University, Reykjavik, Iceland, October 2009.

*Effects of Health Care Costs on Financial Planning in Retirement*  
INFORMS Annual Meeting, Washington, DC, October 2008.

*Algorithmic Prediction of Health Care Costs and Discovery of Medical Knowledge*  
Anderson School of Business, UCLA, Los Angeles, CA, February 2008.  
Stanford Graduate School of Business, Stanford, CA, February 2008.  
Reykjavik University, Reykjavik, Iceland, November 2007.  
INFORMS Annual Meeting, Seattle, WA, November 2007.  
INFORMS Annual Meeting, Pittsburgh, PA, November 2006.  
EURO XXI: 21st European Conference on Operational Research, Reykjavik, Iceland, June 2006.

*New Prediction Methods*  
Society of Actuaries 2007 Annual Meeting, invited talk, Washington, DC, October 2007.

*Applications of Clustering Utilizing Claims Data*  
MIT-ORC Conference on Operations Research in Health care. Poster Presentation, Cambridge, MA, 2007.

*Operations Research and Predicting Health Care Costs*  
The Icelandic Operations Research Society, Reykjavik, Iceland, December 2005.

## **Other Invited Presentations**

Panel member for *New Tech in Business*. Nordic Startup Awards, Kobenhagen, Denmark, October 2018.

TechX lecture: *How can data improve your health?* University of Maryland, College Park, MD, October 2018.

Panel member for *Big Data and Health Care: Hype or Reality?*. Applied Healthcare Operations Management & Research Conference. Washington DC, May, 2015.

Panel member for *Health care Analytics*. The Smith School Business Summit, Bethesda MA, March 2014.

Paper discussant of “*The Differential Impacts of Electronic Health Records Use on Hospital-Level Patient Care*”. WHITE 2013, Washington DC, November 2013.

## Selected Teaching Experience

2012– **Robert H. Smith School of Business**, College Park, MD

*Data Analytics*, Instructor

MBA elective and MS IS core courses covering data analytics, including prediction, classification and unsupervised learning. Developed the course and teach it as the lead instructor in the online MBA program.

2011– **Robert H. Smith School of Business**, College Park, MD

*Data, Models and Decisions*, Instructor

MBA core course in spreadsheet modeling, optimization, simulation and statistics. Developed the course and taught it as the lead instructor in the online MBA program.

2009-2010 **Stanford Graduate School of Business**, Stanford, CA

*Modeling for Quantitative Analysis*, Instructor

MBA core course in spreadsheet modeling, optimization and simulation.

## Selected Industry Experience

2016 – **Founder**, PayAnalytics, Analytics boutique focusing on Pay Gap analytics, Reykjavik, Iceland.

2014 – **Board Member**, Lifis hf, a life insurance company, Reykjavik Iceland. *Vice-Chairman* since spring 2017.

2012 – 2014 **Alternate Board Member**, Arctica Finance, a regulated securities brokerage firm, Reykjavik, Iceland.

2012 **The Central Bank of Iceland**, Reykjavik, Iceland

Developed algorithms for fraud detection for the capital controls system.

2006 – **Independent Consultant**, Reykjavik, Iceland

Projects include analyzing the role of cross-ownership in the fall of the Icelandic banking system, and evaluation and improvement suggestions of call center’s staffing procedures to maximize profit.

6/2005 – 8/2006 **D2Hawkeye**, Waltham, MA

Summer Research Intern. Developed forecasting models for health care costs that outperformed their current forecasting method. These models were implemented as a part of D2Hawkeye’s health care management software.

6/2001 – 8/2002 **AGR - Operations Research**, Reykjavik, Iceland  
Engineer. Developed software to forecast inventory levels and calculate purchasing recommendations. Completed other assignments in the areas of optimization, logistic and public transportation systems.

## Professional Activities

- Service **Member** Board of Advisors for the Pharmaceutical Research Computing, University of Maryland Baltimore. 2018-2020  
**Board Member** INFORMS Transactions of Educations. 2018 –  
**Area Editor** of Analytics for the Encyclopedia of Operations Research and Management Science. 2016 –  
**Reviewer** NSF Smart and Connected Health SCH INT panel P160668. 2016  
**Ad-hoc reviewer** for NSF 13-543 Smart and Connected Health (SCH). 2015  
**Area Editor** for ICIS 2014.  
**Ad-hoc reviewer** for Annals of OR, Management Science, Manufacturing and Service Operations Management, Discrete Optimization, Wiley Encyclopedia of Operations Research, Inform Workshop on Data Mining and Health Informatics and the Inform's Pierskalla Best Paper Award.
- Patents Provisional patent filed on 10/30/2015 for Method and System for Optimally Closing or Reducing Gender Pay Gap with D. Anderson.
- Grants **Provost's Research Initiative to study Artificial Intelligence in Business and Society**, "Leveraging AI for Better Patient Safety and Care Efficiency". Principal Investigator with Jordan Boyd-Graber(Co-PI). Spring 2018.  
**NIHCM Research Grant**, "Promoting Better Pain Management Outcomes: Precision Decision Support for Opioid Prescription". Investigator. R. Agarwal (PI), with D. Alan Nelson, Vickee L. Wolcott, Kislaya Prasad, and Kenyon Crowley. Fall 2016.  
**UM Ventures Seed Grant Program**, "An Algorithm for Optimally Closing or Reducing Gender Pay Gap". Primary Investigator. Spring 2016.  
**Maryland Industrial Partnership Grant**, "Mobile Chronic Health Management in Medicaid". Investigator. Gordon Gao (PI), with Kenyon Crowley and Vheda, Inc. Spring 2016.  
**UMD-Leidos Seed Grant**, "Advancing Predictive Modeling and Health Data Analytics with the UMD-Army Medical Data Repository". Investigator. R. Agarwal (PI), with Gordon Gao, Kenyon Crowley, Major Vickee Wolcott and Major AI Nelson. Spring 2015.  
**Research and Scholarship Award**, University of Maryland, "Data Driven Detection of Episodes of Care". Spring 2015.  
**CNSI**, "Research to Advance the Science and Practice of Combating Fraud, Waste and Abuse in Healthcare", Investigator. R. Agarwal (PI), with K. Prasad, S. Barnes, and K. Crowley. Fall 2014.  
**The Icelandic Center for Research**. "Datamarket.com, an interactive approach to data delivery". Co-Investigator with Datamarket.com. Fall 2009.
- Affiliations Member of INFORMS, POM.



## Awards and Honors

- 2018 Winner of the Best Newcomer and Best Social Impact Start-up at the Icelandic Finals at Nordic Start-up Awards.
- 2018 Best Elective, awarded by the graduating MBA class for data analytics. Robert H. Smith School of Business, University of Maryland.
- 2015-2017 Multiple distinguished Teaching Awards. Robert H. Smith School of Business, University of Maryland.
- 2017 Finalist in outstanding young Icelander of the year, for societal impact and entrepreneurship.
- 2017 Krowe Teaching Award. Robert H. Smith School of Business, University of Maryland.
- 2016 Gulleggid (e. The Golden Egg) - Winner of a entrepreneurship competition with “Pay-Analytics”.
- 2015 Informs Case Competition, finalist.
- 2014 Smith School of Business’ top 15% teaching award.
- 2013 Second place, 2013 POMS College of Healthcare Operations Management Best Paper Award.

## Examples of Press Coverage

“A Solution that can eliminate the gender-paygap”. *Frettatiminn*, March 3rd, 2017. Not available online.

“The effects of offshore shell companies”. *Kjarninn*, April 27th, 2016. Available @ <http://kjarninn.is/skodun/2016-04-26-rudningsahrif-aflandsfelaga/>

“Foreign Pseudo-man a big player in the pre-crash era”. *The National Broadcasting Network (RUV)*, April 26th, 2016. Available @ <http://ruv.is/frett/gervimadur-utlond-umsvifamikill-fyrir-h>

“Foreign Pseudo-man the Recipient of 5.5 billion ISK in Dividends”. *Frettabladid*, April 14th, 2010. Available @ [http://epaper.visir.is/media/201004140000/pdf\\_online/1\\_4.pdf](http://epaper.visir.is/media/201004140000/pdf_online/1_4.pdf).

“Foreign Pseudo-man a Recipient of Dividends”. *Morgunbladid*, April 14th, 2010. available @: [http://mbl.is/mm/frettir/innlent/2010/04/12/gervimadur\\_i\\_utlondum\\_faer\\_ard/](http://mbl.is/mm/frettir/innlent/2010/04/12/gervimadur_i_utlondum_faer_ard/).

“The Owners Weakened the Banks”. *Frettabladid*, April 13th, 2010. Available @ [http://epaper.visir.is/media/201004130000/pdf\\_online/1\\_20.pdf](http://epaper.visir.is/media/201004130000/pdf_online/1_20.pdf).

“Robert Tchenguiz was the biggest creditor - the top 20”. *Visir*, April 12th, 2010. Available @: <http://www.visir.is/article/2010246064668>

“Complicated connections of over 816 companies”. *Morgunbladid*, April 10th, 2010. Available @: [http://mbl.is/frettir/innlent/2010/04/12/flokin\\_tengsl\\_816\\_fyrirtaekja/](http://mbl.is/frettir/innlent/2010/04/12/flokin_tengsl_816_fyrirtaekja/).