

Md Mahmudul Hasan

hasan.mdmahmudul@ufl.edu | Work: (352) 273-6276, Mob: (256)-6946603 | Google Scholar:[Md Mahmudul Hasan](#)
DSIT 6019 | 1225 Center Drive | Gainesville, FL 32610

RESEARCH PROFILE

Research Methodologies: Artificial intelligence and machine learning, big data analytics, multivariate statistical modeling, applied operations research, and discrete event simulation.

Application Areas: Public health (substance use disorder, opioid use disorder, preventable hospital readmission, mental health disorder), supply chain and logistics.

EDUCATION

Northeastern University, [Decision Analytics Lab](#) Boston, MA
PhD in Industrial Engineering, GPA: 4.0/4.0 Fall 2021

Dissertation: Leveraging Analytics to Inform Policies and Develop Decision Frameworks for Addressing Opioid Overdose Epidemic

Bangladesh University of Engineering and Technology Dhaka, Bangladesh
M.Sc. in Industrial & Production Engineering; GPA: 4.0/4.0 2013 - 2015

Thesis: Formulation and optimization of a three-echelon multi-objective supply chain network design model under uncertainty

Bangladesh University of Engineering and Technology Dhaka, Bangladesh
Bachelor in Industrial & Production Engineering; GPA: 3.77/4.0 2008 - 2013

Thesis: Multi-criteria Supplier Selection : A Fuzzy Approach

PROFESSIONAL EXPERIENCE

Assistant Professor

Department of Pharmaceutical Outcomes and Policy, College of Pharmacy
Department of Information Systems and Operations Management, College of Business
University of Florida, Gainesville

From July 2022-Present

ORISE Postdoctoral Fellow, U.S. Food and Drug Administration (FDA)

From Dec 2021-June 2022

Fellowship Name

- Drug Safety and Artificial Intelligence Methods Fellowship

Fellowship Center

- Office of Translational Sciences, Immediate Office (OTS - IO) at the Center for Drug Evaluation and Research (CDER), FDA

Research Scientist

Nov 2021-Dec 2021

Decision Analytics Lab and Center for Health Policy and Healthcare Research

Graduate Research Assistant, Northeastern University

2017-2021

Research Experience

- Development of a machine learning framework to predict the risk of opioid use disorder (OUD).
- Development of a deep learning-based computational framework to reveal patients' personalized risk profile associated with OUD.
- Development of an interpretable two-stage machine learning framework for OUD treatment discontinuation prediction.
- Investigation of the prescribing patterns of OUD treatment among MA commercially insured population.
- Investigation of patients' adherence behavior, treatment discontinuation patterns, and long-term health outcome associated with OUD treatment.
- Development of deterministic and stochastic models for the return and secure disposal of prescription opioids.
- Investigation of local physician practice migration and changes in practice style.
- Examination of the patterns and determinants of non-index hospital readmission.
- Development of a decision support systems for selecting resilient suppliers.
- Development of a proactive planning framework to help hospital during slow onset extreme weather events.
- Formulation of a joint production and inventory planning model for IBM's integrated manufacturing and re-manufacturing system.

Mentorship Experience

- Mentoring MSc. and undergraduate students in their thesis and capstone projects.

Lecturer, Mechanical and Production Engineering Department Ahsanullah University of Science and Technology, Bangladesh.

Apr 2013-Aug 2015

- Primary responsibilities were to teach, take exams and grade courses related to operations research, operations management, and supply chain management

updated: January 24, 2024

Published/Accepted Papers**Healthcare Analytics**

1. Gary J. Young, David Zepeda, Stephen Flaherty, **Md Mahmudul Hasan**, "Physician Practice Migration and Changes in Practice Style: A Study of Low-Value Diagnostic Imaging", (Under Review in POMS).
2. **Md Mahmudul Hasan**, Gary J. Young, Prathamesh Mohite, Jiesheng Shi, Leonard D. Young, Scott G. Weiner, Md Noor-E-Alam, "A Machine Learning Based Two-Stage Clinical Decision Support System for Predicting Patients' Discontinuation from Opioid Use Disorder Treatment: Retrospective Observational Study", BMC Medical Informatics and Decision Making volume. Volume 21, Article Number 331, November 2021.
3. **Md Mahmudul Hasan**, Gary Young, Mehul Rakeshkumar Patel, Md. Noor-E-Alam, Alicia Sasser Modestino, and Leon D. Sanchez. "A Machine Learning Framework to Predict the Risk of Opioid Use Disorder", Machine Learning with Applications. Vol. 6, December 2021, 100144.
4. **Md Mahmudul Hasan**, Md Noor-E-Alam, Prathamesh Mohite, Saiful Islam, Alicia Sasser Modestino, Alyssa M. Peckham, Leonard D. Young, and Gary J. Young. "Patterns of Patient Discontinuation from Buprenorphine/Naloxone Treatment for Opioid Use Disorder: A Study of a Commercially Insured Population in Massachusetts", Journal of Substance Abuse Treatment, Vol. 131, December 2021, 108416.
5. **Md Mahmudul Hasan**, Md Noor-E-Alam, Jiesheng Shi, Leonard D. Young, Gary J. Young, "Long-term patient outcomes from buprenorphine/naloxone treatment for opioid use disorder: A retrospective analysis for a commercially insured population", The American Journal of Drug and Alcohol Abuse, 48(4), 481-491.
6. **Md Mahmudul Hasan**, Tasnim Ibn Faiz, Gary J. Young, Md. Noor-E-Alam "Optimizing return and secure disposal of prescription opioids to reduce the diversion to secondary users and black market", Socio-Economic Planning Sciences, 101457.
7. **Md Mahmudul Hasan**, Md Noor-E-Alam, Xiaoyi Wang, E. David Zepeda, and Gary J. Young. "Hospital Readmissions to Nonindex Hospitals: Patterns and Determinants Following the Medicare Readmission Reduction Penalty Program." Journal for healthcare quality (2020), DOI: 10.1097/JHQ.000000000000199.
8. Gary J. Young, **Md Mahmudul Hasan**, Md Noor-E-Alam, Leonard D. Young, "Treatment Experiences for Patients Receiving Buprenorphine/Naloxone for Opioid Use Disorder: A Qualitative Study of Patients' Perceptions and Attitudes", Substance Use and Misuse, 1-8.
9. Richard Paulsen, Alicia Sasser Modestino, **Md Mahmudul Hasan**, Md. Noor-E-Alam, Leonard Young and Gary Young. "Patterns of Buprenorphine/Naloxone Prescribing: An Analysis of Claims Data from Massachusetts", The American Journal of Drug and Alcohol Abuse, 2019, DOI:10.1080/00952990.2019.1674863.
10. Md Saiful Islam, **Md Mahmudul Hasan**, Xiaoyi Wang, Hayley D. Germack, and Md Noor-E-Alam. "A systematic review on healthcare analytics: Application and theoretical perspective of data mining." In Healthcare, vol. 6, no. 2, p. 54. Multidisciplinary Digital Publishing Institute, 2018.

Supply Chain Analytics

11. **Md Mahmudul Hasan**, Dizuo Jiang, AMM Sharif Ullah, and Md Noor-E-Alam. "Resilient supplier selection in logistics 4.0 with heterogeneous information." Expert Systems with Applications, 139 (2019): 112799.
12. Dizuo Jiang, **Md Mahmudul Hasan**, Tasnim Ibn Faiz, and Md Noor-E-Alam. "A Possibility Distribution Based Multi-Criteria Decision Algorithm for Resilient Supplier Selection Problems, Journal of Multi-Criteria Decision Analysis (2019), DOI:10.1002/mcda.1696.
13. **Md Mahmudul Hasan**, Md Abu Sayeed Shohag, Abdullahil Azeem, and Sanjoy Kumar Paul. "Multiple criteria supplier selection: a fuzzy approach." International Journal of Logistics Systems and Management, 20, no. 4 (2015): 429-446.

Under Review Paper

14. Javed Al Faysal, Md. Noor-E-Alam, Gary J. Young, Weihsuan Lo-Ciganic, Amie Goodin, James L. Huang, Debbie L. Wilson, Tae Woo Park, **Md Mahmudul Hasan**, "An Explainable Machine Learning Framework for Predicting the Risk of Buprenorphine Treatment Discontinuation among Commercially Insured Individuals for Opioid Use Disorder". (Under review in Computers in Biology and Medicine).
15. Mohammad Yaseliani, Md. Noor-E-Alam, **Md Mahmudul Hasan**, "Mitigating Sociodemographic Bias in Opioid Use Disorder Prediction: A Fairness-Aware Machine Learning Framework (under review in JMIR AI).
16. Gary J. Young, Tianjie Zhu, **Md Mahmudul Hasan**, Farbod Alinezad, Leonard Young, Md. Noor-E-Alam, "Patient outcomes following buprenorphine treatment for opioid use disorder: The influence of patient- and prescriber-level characteristics". (Under review in Addiction)

Working Papers

17. Tianjie Zhu, **Md Mahmudul Hasan**, Gary J. Young, Md. Noor-E-Alam, "The Clinical Value of Counseling as a Complement to Buprenorphine Treatment for Opioid Use Disorder: A Retrospective Observational Study". (To be submitted soon in The American Journal of Drug and Alcohol Abuse).
18. Mahsha Ghanbarpour, Ozlem Ergun, **Md Mahmudul Hasan**, Md Noor-E-Alam, Gary J. Young. "Analyzing the effect of snowstorms on hospitals' utilization", (To be submitted soon in BMC Health Services Research).

INVITED TALKS

1. Mohammad Yaseliani, Md. Noor-E-Alam, **Md Mahmudul Hasan**, Advancing Equity in Opioid Use Disorder Prediction: A Bias Mitigation Algorithm for Accurate and Fair Outcomes. Data Mining and Decision Analytics Workshop, 2023 INFORMS Annual Meeting.
2. **Md Mahmudul Hasan**, Tasnim Ibn Faiz, Gary J. Young, Md. Noor-E-Alam. Optimizing Return and Secure Disposal of Prescription Opioids to Reduce Diversion to Secondary Users. 2023 POMS Annual Conference. Track: Healthcare Operations Management. Session: Service and Coordination in Healthcare Operations.
3. **Md Mahmudul Hasan**, Md Noor-E-Alam, Jiesheng Shi, Leonard D. Young, Gary J. Young, "Long-term patient outcomes from buprenorphine/naloxone treatment for opioid use disorder: A study of Massachusetts commercially insured population", INFORMS Annual Meeting, 2021. Session: Analytics to Address Opioid Use Disorder.
4. **Md Mahmudul Hasan**, Md Noor-E-Alam, Mehul Patel, Alicia Sasser Modestino, Gary Young, "A big data analytics framework to predict the risk of opioid use disorder using Massachusetts All Payer Claims Data", Virtual INFORMS Annual Meeting, 2020. Session: AI/ML to address opioid epidemic.
5. **Md Mahmudul Hasan**, Jiesheng Shi, Prathamesh Mohite, Md Noor-E-Alam, Alicia Sasser Modestino, Gary Young, "A clinical decision support system to predict discontinuation of Buprenorphine/naloxone treatment for opioid use disorder leveraging Massachusetts All Payer Claims Data", Virtual INFORMS Annual Meeting, 2020. Session: AI/ML to address opioid epidemic.

CONFERENCE PRESENTATIONS

1. Javed Al Faysal, Md. Noor-E-Alam, Gary J. Young, Weihsuan Lo-Ciganic, Amie Goodin, James L. Huang, Debbie L. Wilson, Tae Woo Park, **Md Mahmudul Hasan**, An Explainable Machine Learning Framework to Predict Opioid Use Disorder Treatment Discontinuation and Stratify Patients into Risk Subgroups: Retrospective Study on MarketScan Commercial Claims Data. AMIA Informatics Summit 2024 (Accepted)
2. Mohammad Yaseliani, Md. Noor-E-Alam, **Md Mahmudul Hasan**, Machine Learning for Equitable Prediction of Opioid Use Disorder: A Bias Mitigation Algorithm Towards Accurate and Fair Outcomes. AMIA Informatics Summit 2024 (Accepted).
3. Javed Al Faysal, Md. Noor-E-Alam, Gary J. Young, Weihsuan Lo-Ciganic, Amie Goodin, James L. Huang, Debbie L. Wilson, Tae Woo Park, **Md Mahmudul Hasan**, A machine learning prediction of buprenorphine care discontinuity among individuals with opioid use disorder: retrospective observational study, Addiction Health Service Research (AHSR) 2023
4. Gary J. Young, David Zepeda, Stephen Flaherty, **Md Mahmudul Hasan**, "Physician Practice Migration and Changes in Practice Style: A Study of Low-Value Diagnostic Imaging' Practice Patterns", Academy of Management, 2023 Annual Conference.
5. Huang W., Ahmed M., Smith S., **Hasan M.M.**, Rouhizadeh M., Bian J., Kimmel S., Morris E.J., Yang L., Guo J. Trajectories of Sacubitril/Valsartan Adherence Among Medicare Beneficiaries with Heart Failure. ISPOR 2023. Boston, MA. May 7-10, 2023. Poster.
6. Weihsuan Lo-Ciganic, **Md Mahmudul Hasan**, Pei-Lin Huang, Khoa Nguyen, Debbie L Wilson, Christopher Harle, Jiang Bian, Yonghui Wu, Jeremy C Weiss, Adam J Gordon, Jerry Cochran, Julie Dilulio, Laura Militello, Stephanie AS Staras, Scott M Vouri, Jeffrey T Budd, Senthil R. Meenrajan, Frank A. Orlando, John M Pennington, Siegfried Schmidt, Motomori Lewis, Courtney Kuza, Walid F. Gellad. Developing and evaluating of a machine-learning opioid overdose prediction and risk stratification e-tool (DEMONSTRATE). 2023 AMIA Informatic Summit. March 13-16, Seattle, WA, USA.
7. Gary J. Young, David Zepeda, Stephen Flaherty, **Md Mahmudul Hasan**, "Impact of Local Practice Migration on Physicians' Practice Patterns", Academy of Management, 2021 Annual Conference.
8. **Md Mahmudul Hasan**, Jiesheng Shi, Md Noor-E-Alam, Leonard D. Young, Gary J. Young, "Patients' long-term health outcomes from buprenorphine/naloxone treatment for opioid use disorder: A retrospective analysis of Massachusetts commercially insured population", Academy Health Annual Research Meeting, 2021.
9. **Md Mahmudul Hasan**, Md Noor-E-Alam, Prathamesh Mohite, Saiful Islam, Alicia Sasser Modestino, Gary J. Young, and Leonard D. Young. "Patterns of Patient Buprenorphine/Naloxone Treatment Discontinuation for Opioid Use Disorder Among Massachusetts Commercially Insured Population", CDC Overdose Data to Action (OD2A) Virtual Recipient Meeting, 2021
10. **Md Mahmudul Hasan**, Prathamesh Mohite, Md Noor-E-Alam, Alicia Sasser Modestino, Gary Young, "Analyzing Recent Trend of Massachusetts Opioid Prescribing Patterns leveraging All Payer Claims Data", INFORMS Annual Meeting, 2019.
11. **Md Mahmudul Hasan**, Md Noor-E-Alam, Mehul Patel, Alicia Sasser Modestino, Gary Young, "Predicting Risk of Opioid Use Disorder by Leveraging Massachusetts All Payer Claim Data", INFORMS Annual Meeting, 2019.
12. **Md Mahmudul Hasan**, Md Noor-E -Alam, Alicia Sasser Modestino, Gary Young, "Addressing Massachusetts Opioid Crisis: An Integrated Approach of Data Mining and Machine Learning", International Conference on Networking, Systems and Security, 2018.
13. **Md Mahmudul Hasan**, Md Noor-E-Alam, Alicia Sasser Modestino, Gary Young, "Enhancing Community Resilience to Combat Crisis of Opioid Addiction", INFORMS Annual Meeting, 2018.
14. Dizuo Jiang, **Md Mahmudul Hasan**, Tasnim Ibn Faiz, Md. Noor-E-Alam, "Resilient Suppliers Selection: A Pragmatic Decision-Making Approach", INFORMS Annual Meeting, 2018.
15. Mahsha Ghanbarpour, **Md Mahmudul Hasan**, Md. Noor-E-Alam, Ozlem Ergun, "Proactive Planning for Slow Onset Weather Events", INFORMS Annual Meeting, 2018.

HONORS AND AWARDS

1. **Best paper award.** The paper entitled "Physician Practice Migration and Changes in Practice Style: A Study of Low-Value Diagnostic Imaging" has been selected as one of the best accepted papers in the 83rd Annual Meeting of the Academy of Management (AOM). This high honor entitles our paper to be published in the Proceedings of the 2023 Academy of Management Meeting. (Accepted March 31, 2023)
2. **Healthcare Journal 2020 Best Paper Award**, A Systematic Review on Healthcare Analytics: Application and Theoretical Perspective of Data Mining", Healthcare, Vol. 6, pp. 1-42, 2018.
3. **Outstanding Graduate Research Award 2020, College of Engineering**, Northeastern University.
4. **John and Katharine Cipolla Merit Award - PhD**, Mechanical and Industrial Engineering Department, Northeastern University.
5. **2018 Alfred J. Ferretti Travel Awards**, Mechanical and Industrial Engineering Department, Northeastern University.
6. **University merit list** in Bangladesh University of Engineering & Technology for 2 semesters.
7. **Deans award** in Bangladesh University of Engineering & Technology for 2 years.
8. **Bangladesh government merit scholarship scheme** in Higher Secondary Examination in 2007.

GRANTSMANSHIP

- R21 entitled "Developing and Evaluating a Machine-Learning Buprenorphine Care Discontinuity Prediction e-tool (BUP-CARE)" submitted to NIDA (NOT-DA-23-006) (Discussed in the first submitted, Under review after revise and resubmit)
- "Machine learning enabled prediction of breast cancer survivors at high risk of endocrine therapy nonadherence, and opioid-related adverse outcomes" submitted to PhRMA Foundation Research Starter Award in Value Assessment & Health Outcome Research (Not funded)

Involved in the development of grant proposals for the following agencies:

- National Science Foundation (NSF), National Institute of Health (NIH), Centers for Disease Control and Prevention (CDC) in partnership with Massachusetts Department of Public Health (MDPH), Agency for Healthcare Research and Quality (AHRQ), Office of Naval Research (ONR), Global Resilience Institute (GRI) at Northeastern University.

SELECTED PROJECTS

A machine learning framework to predict the risk of OUD | python, Unix, Google BigQuery

- Developed and implemented a machine learning framework to investigate patients' long-term opioid usage pattern.
- Assessed the predictive performance of several machine learning algorithms in predicting future risk of OUD.
- Random Forest achieved superior performance in terms of AUC and recall.
- Implemented several feature engineering techniques for dimensionality reduction.
- Quantified the effect of influential features associated with the prediction of OUD.
- Merged several datasets e.g., pharmacy and medical claims data of Massachusetts All Payer Claims Database (MA APCD).

Investigating patients' adherence behavior towards the treatment for OUD | python, BigQuery, R

- Studied the general adherence pattern of MA commercially insured patients to Suboxone treatment via survival analysis.
- Approximately 75% of patients in the study cohort discontinued treatment within 2 years of treatment initiation.
- Developed a mixed-effect cox proportional hazard model to investigate the influence of patient and prescriber-level factors on treatment adherence.
- High volume prescribers' patients are less likely to continue the treatment.

Interpretable machine learning framework to predict patient discontinuation from OUD treatment | python, BigQuery

- Developed an interpretable computational framework leveraging machine learning to predict OUD treatment discontinuation.
- Implemented several tree-based and non-tree based models.
- Developed a set of interpretable decision rules to inform clinical guidelines for improving treatment adherence.

Investigating long-term patient outcomes from buprenorphine treatment for OUD | python, R

- Conducted a retrospective, longitudinal analysis of pharmacy and medical claims to examine outcomes of patients initiating treatment for OUD.
- Conducted a cluster analysis of the study sample based on medication adherence and treatment duration.
- Conducted multivariate statistical analyses to investigate whether a relationship existed between patient treatment duration and likelihood and frequency of experiencing hospitalization and ER visits

Optimizing return and secure disposal of unused prescription opioids | AMPL, python

- Developing deterministic and stochastic mixed-integer models for the joint optimization of opioid disposal kiosk location and monetary incentive for patients with unused prescription opioids.

Investigating local physician practice migration and changes in practice style | R updated: January 24, 2024

- Investigated the extent to which a physician’s work environment influences practice style versus training and personal preferences.
- Examined changes in physician practice style at two levels of a work environment, the practice organization comprised of peers sharing administrative arrangements, and practice site comprised of peers who shared actual physical working space.
- Results indicate that migrating physicians changed their practice style quickly and substantially in conformance with the prevailing pattern of their new work environment regardless of whether or not the pattern was aligned with evidence-based standards for diagnostic imaging.

Statistical modeling for analyzing patterns and clinical determinants of opioid antagonist therapy | python, Unix, BigQuery, R

- Investigated the prescribing pattern of Suboxone—an opioid antagonist among MA commercially insured population.
- Performed multi-variate regression analyses to examine the association of clinical features with Suboxone prescribing.
- The most common clinical condition associated with Suboxone prescribing was OUD.

Designing a deep learning based computational framework to extract personalized risk profile of OUD | python, Unix, Google BigQuery

- Developing a framework to represent irregularly sampled clinical episodes in claims data.
- Designing attention mechanism to improve interpretability of the framework.
- Designing a time aware disease progression function to learn the influence of clinical trajectories of co-occurring conditions on OUD.

Analyzing 30-day non-index hospital readmission | R

- Difference-in-difference analysis to investigate the effect of HRRP on the patterns of 30-day non-index readmission.
- Mixed-effect logistic regression estimates the effects of patient and hospital-level factors on non-index readmission.

A systematic review on healthcare analytics: application and theoretical perspective of data mining

- Studies on healthcare analytics were reviewed based on healthcare sub-areas, data mining techniques, types of analytics, data, and data sources.
- **Findings:** Although human generated data e.g. EMR is predominantly used mostly for clinical and administrative decision making, analytics based on website and social media data has been increasing in recent years.
- **Future directions:** Lack of prescriptive analytics in practice and integration of domain expert knowledge in the decision-making process emphasize the necessity of future research.

Proactive planning framework for slow onset extreme weather events | python, BigQuery

- Proposed a pattern recognition technique to identify the unusual pattern of hospital admission and discharge rate immediately before, during and after snowstorms.
- Designed a Long-Short Term Memory Recurrent Neural Network (LSTM-RNN) framework to predict the forecast evolution scenarios with associated transition probabilities.

Multi-criteria Decision Making (MCDM) based pragmatic decision support system

- Developed MCDM based methodology to quantify epistemic uncertainty inherent in qualitative decision relevant information.
- Developed a framework to convert and integrate crisp granular information extracted from graphical data into triangular fuzzy based TOPSIS decision matrix.
- Designed a Decision Support System to select resilient suppliers in logistics 4.0 industries in the presence of imprecise information, multiple, and conflicting objectives/criteria.

Integrated production-inventory model for IBM’s manufacturing and re-manufacturing system

- Formulated a two-stage stochastic programming model for production and inventory planning under uncertainty in returned product quantity and quality.

Network interdiction model for robust cyber-security | python, Gurobipy

- Formulated a two-stage stochastic network interdiction model based on attack graphs containing both AND & OR nodes, multiple attackers with different budget, and heterogeneous attacker-defender pay-off structure.
- Developed a constraint and column generation algorithm to generate solutions for two-stage stochastic model.
- Reformulated the two-stage model using path based formulation and developed an path based solution algorithm.

TECHNICAL STRENGTHS

- **Analytical Skills:** Multi-variate Linear and Logistic Regression Analysis (Mixed-Effect Logistic Regression), Survival Analysis, Cox Proportional Hazard Regression Model, Causal Inference, Difference-in-Difference Analysis, Multi-variate Negative Binomial Regression, Supervised Machine Learning Models, Deep Learning, Deterministic and Stochastic Optimization, Supply Chain Network Design and Analysis, Discrete Event Simulation.
- **Languages:** Python, R, AMPL **Optimization Solver:** Gurobipy, Docplex
- **Libraries:** Scikit-Learn, Numpy, Pandas
- **Database:** SQL, BigQuery
- **Visualization:** Matplotlib, Seaborn, ggplot, Gephi, Tableau
- **Others:** Google Cloud, Unix, SLURM

EXTRA-CURRICULAR ACTIVITIES

- Organized event on "Machine Learning in Healthcare" as a member of Northeastern INFORMS student chapter.
- Organized seminar on "Supply Chain Preface: Practice in Industries" as a member of Association of Industrial and Production Engineers (AIPE).
- Participated in a workshop on "Contribution of Supply Chain Management in Corporate Arena" organized by Association of Industrial & Production Engineers (AIPE), BUET.

REFERENCES

Richard Segal
Professor And Interim Chair&
Department of Pharmaceutical
Outcomes and Policy
University of Florida
☎ (352) 273-6265
✉ segal@ufl.edu

Md Noor E Alam
Assistant Professor,
Department of Mechanical and
Industrial Engineering
Director, Decision Analytics Lab
Northeastern University
☎ +1 781 353 9136
✉ mnam@neu.edu

Gary Young
Professor,
Strategic Management and Healthcare
Systems
D'Amore-McKim School of Business
Director, Center for Health Policy and
Healthcare Research
Northeastern University
☎ +1 617 620 4485
✉ ga.young@northeastern.edu