# Toyya A. Pujol, PhD

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| RESEARCH APPOINTMENTS | | |
|---|---|---|
| | **Full Operations Researcher, RAND Corporation** | 2021 - Present |
| | **Assistant Professor, Purdue University** | 2020 - 2021 |
| | School of Industrial Engineering | |
| | Regenstrief Center for Healthcare Engineering | |

| EDUCATION | | |
|---|---|---|
| | **Georgia Institute of Technology** | 2014 - 2020 |
| | PhD, Industrial Engineering - Specialization in Statistics | |
| | Advisor: Nicoleta Serban, PhD | |
| | **Harvard University** | 2018 - 2019 |
| | Visiting Doctoral Scholar, Harvard Medical School - Health Care Policy Department | |
| | Advisor: Sherri Rose, PhD | |
| | **Georgia Institute of Technology** | 2014 - 2017 |
| | M.S., Statistics | |
| | **Northeastern University** | 2008 - 2010 |
| | M.S., Operations Research | |
| | **Massachusetts Institute of Technology** | 2003 - 2007 |
| | B.S., Management Science - Specialization in Operations Research | |

| AWARDS & SCHOLARSHIPS | | |
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| | **ADJOINT Scholar**, Mathematical Sciences Research Institute | 2021 – 2022 |
| | - Year-long program to develop research with a renowned scholar. Financial award includes coverage for two-week in person workshop and funding to attend conference to present work. | |
| | - Research leader: Emma Benn, PhD | |
| | - Research topic: Racial/Ethnic Disparities in Health: Applying a More Nuanced Inferential Framework | |
| | **Sloan Scholar**, Alfred P. Sloan Foundation's Minority PhD Program | 2018 – 2020 |
| | - Financial award recognizing exceptional PhD students including training, conference attendance and 3-year funding to support student | |
| | **Goizueta Foundation Fellow**, Georgia Institute of Technology | 2018 – 2020 |
| | - Financial award granted to graduate students for exemplary levels of scholarship and innovation and service to the Hispanic/Latino Georgia Tech community | |
| | **INFORMS Women in OR/MS Doctoral Colloquium Award** | 2018 |
| | - Travel award to supplement attendance conference and the pre-conference colloquium | |
| | **Conference for African American Researchers in Mathematical Sciences (CAARMS)** | 2018 |
| | - Financial award for "Best Presentation Style Poster Award" | |
| | **INFORMS Minority Issues Forum (MIF) Poster Competition Finalist** | 2017 |
| | **Tower Award, Masters Level,** Georgia Institute of Technology | 2017 |
| | - Recognizes MS students with high GPA | |

**John Morris Fellow,** Georgia Institute of Technology                                    2014 -2016
  - Departmental financial award to attract strong doctoral applicants to attend ISyE

**George Family Fellow,** Georgia Institute of Technology                                  2014 – 2016
  - Departmental financial award for exceptional students performing health care research

| PUBLICATIONS | |
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9. Quinn, P. D., Chang, Z., **Pujol, T.A.**, Bair, M.J., Gibbons, R.D., Kroenke, K., D'Onofrio, B.M., "Association between Prescribed Opioid Dose and Risk of Motor Vehicle Crashes" *Pain* (In press)

8. Kilmer B., Pardo B., **Pujol T.A.**, Caulkins J.P. (2022) **"**Rapid Changes in Illegally Manufactured Fentanyl Products and Prices in the United States", *Addiction*

7. Mori L., O'Hara K., **Pujol T.A.,** Ventresca M. (2022) "Examining Supervised Machine Learning Methods for Integer Link Weight Prediction Using Node Metadata", *Entropy*

6. Garcia, G.P., Dehghanpoor, R., Stringfellow, E.J., Gupta, M., Rochelle, J., Mason, E., **Pujol, T.A.**, Jalali, M.S., "Identifying Advice-Seekers for Suboxone Use on Reddit via Social Network Characteristics and Suboxone Use Stage" *International Journal of Environmental Research and Public Health*

5. Rutter C.M., Folasade M.P., Coronado G.D., **Pujol T.A**., Thomas E.G., Cabreros I. (2021) "Racism Is a Modifiable Risk Factor: Relationships Among Race, Ethnicity, and Colorectal Cancer Outcomes", *Gastroenterology*

4. Mori, L., Ventresca, M., **Pujol, T.A.** (2022), "Supervised Link Weight Prediction Using Node Metadata. Complex Network & Their Applications, X", *Complex Networks 2021. Studies in Computational Intelligence*

3. **Pujol, T.A.**, Serban, N., Kottke, M., Swann, J., (2020) "Assessing the Impact on the Health and Wellness Outcomes of Infants born to Teen Mothers", *Maternal and Child Health Journal*

2. **Pujol, T.A**. & Clayton, E., McDonald, J.F., Qui, P., (2020), "Leveraging TCGA gene expression data to build predictive models for cancer drug response", *BMC Bioinformatics* Vol 21, 364 .

1. **Pujol T.A.**, Serban N., Swann J., Kottke M. (2019) "Medicaid Claims for Contraception Among Women with Medical Conditions After Release of the US Medical Eligibility Criteria for Contraceptive Use", *Preventing Chronic Disease* Vol 16:180207

| WORKING PAPERS | |
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3. **Pujol, T.A.**, Edoh, K., Alhajjar, E., Martin, M., Hubbard, R. "Effects of Selection Bias and Differential Outcome Ascertainment on Fairness of Health Policies based on EHR Data"

2. **Pujol, T.A.**, DeYoreo, M., Rutter, C.M., Lee, S.D., "Two-stage Modeling to Identify Race Differences on how Colorectal Cancer Risk Changes with Period and Cohort"

1. Gonzalez-Canas, C., **Pujol, T.A.**, Griffin, P., "Using Social Determinants to Predict Gestational Diabetes" (To be submitted to: *Diabetes*)

| PRESENTATIONS | |
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17. "Health + Data: Building Data Science Teams". (2021, Mar). Distinguished Guest Panelist, Purdue University, West Lafayette, IN

16. "Why Choose an Academic Career in Engineering". (2021, Feb). Black Trailblazers in Engineering Guest Faculty Panelist, Purdue University, West Lafayette, IN

15. "Exploring Data Science within Industrial Engineering". (2021, Feb). IISE Great Lakes Regional Conference Keynote Speaker (Virtual)

14 "How will Data Science and AI Shape the Post-Pandemic Future of Healthcare?". (2021, Jan). Distinguished Guest Panelist, Purdue University, West Lafayette, IN

13. "Health Data Science". (2020, Nov). Rice University, Computational and Applied Mathematics Department Colloquium, Houston, TX

12. "Health Data Science". (2020, Sept). Purdue University, Biomedical Engineering Departmental Seminar, West Lafayette, IN

11. "Analytics and Machine Learning for Healthcare Data". (2020, Jan). University of Wisconsin – Madison, Industrial Engineering Department, Madison, WI

10. "Analytics and Machine Learning for Healthcare Data". (2020, Jan). Purdue University, Industrial Engineering Department, West Lafayette, IN

9. "Analytics and Machine Learning for Healthcare Data". (2019, Dec). RAND Corporation, Pittsburg, PA.

8. "Analytics and Machine Learning for Healthcare Data". (2019, Dec). Workshop in Operations Research and Data Science (WORDS), Duke University, NC.

7. "Analytics and Machine Learning for Healthcare Data". (2019, Dec). SUNY Binghamton University, Systems Science & Industrial Engineering Department, Binghamton, NY.

6. "Robust Statistical Learning Methods for Difference-in-Differences Designs". (2019, Oct). INFORMS Annual Conference, Seattle, WA.

5. "Robust Statistical Learning Methods for Difference-in-Differences Designs". (2019, Jul). INFORMS Healthcare Conference, Boston, MA.

4. "Robust Nonparametric Methods for Difference-in-Differences Designs". (2019, Mar). ENAR Conference, Philadelphia, PA.

3. "Leveraging TCGA gene expression data to build predictive models for cancer drug response". (2018, Nov). INFORMS Annual Conference, Phoenix, AZ.

2. "Assessing Impact of Teen Pregnancy on Health and Wellness of Infants". (2018, Jul). Conference for African American Researchers in Mathematical Sciences (CAARMS), Princeton University, NJ.

1. "Determining Compliance of Contraception Guidelines for Women". (2017, Aug). Day of Data, Decisions and Defense Workshop, Naval Postgraduate School, CA.

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| **FUNDED RESEARCH** | **IDEaS Data Science Research Fellowship**      2019 - Present <br> - Supports PhD student research proposal in high-impact cross-disciplinary data science project <br> - Project supported: Machine learning to predict the weights of a social network with application to patient-sharing network of chronic opioid users within the Medicaid population <br><br> **T32 NIH Computational Biology & Biomedical Genomics Grantee**      2016 - 2018 <br> - 2 years of full funding for doctoral student to facilitate interdisciplinary research <br> - Linked clinical trial data with publicly available genomic data to predict cancer drug response within patients. <br> - Assessed contraception rates of women who had medical conditions that CDC guidelines recommended highly effective contraception methods <br> - Compared seven outcomes of infants born to teen mothers and adult mothers on Medicaid <br><br> **Air Force Cost Analysis Agency (AFCAA)**      2010 - 2012 <br> - Completed special cost modeling research projects for the AF such as estimate integration costs of GPS technology across Air Force fleet or economic impact of a base closing |

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| **MENTORING EXPERIENCE** | **Doctoral Research Advisor, Purdue University** | 2020 - Present |
| |   - Carolina Gonzalez-Canas | |
| |   - Larissa Kawano Mori | |
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| | **Ph.D. Research Mentor, Georgia Institute of Technology** | 2016 - 2020 |
| |   - Gabriella Runnels (currently Supply Chain Science Manager at American Eagle Outfitters) | |
| |   - Shamsya Khan (currently Senior Strategy Analyst at Accenture) | |
| |   - Anna Smith (currently Senior Software Engineer at Amino) | |
| |   - Hannah Murray (currently MS Student in Analytics at Georgia Tech) | |

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| **TEACHING EXPERIENCE** | **Instructor, Purdue University** | 2020-2021 |
| |   - IE330: Probability and Statistics for Engineering, II (Spring 2021) | |
| |   - IE431: Industrial Engineering Senior Design (Fall 2020, Spring 2021) | |
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| | **Graduate Student Instructor, Georgia Institute of Technology** | 2019 |
| |   - ISyE 3025: Engineering Economy (Summer 2019) | |
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| | **Graduate Teaching Assistant, Georgia Institute of Technology** | **2016 - 2020** |
| | Teaching Assistant Courses | |
| |   - ISyE 7406: Data Mining & Statistical Learning (Spring 2020) | |
| |   - ISyE 6402: Time Series Analysis, Head TA (Fall 2019) | |
| |   - ISyE 6420: Bayesian Statistics (Spring 2016) | |
| |   - ISyE 3770: Statistical Methods (Summer 2016) | |
| |   - ISyE 4106: Senior Design (Spring 2015, Fall 2015) | |
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| | **Math and Physics Tutor, Summit Educational Group** | 2010 - 2015 |
| | Subjects Tutored | |
| |   - SAT Math | |
| |   - SAT Subject Tests: Math I, Math II, Physics | |
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| | **Cost Analysis Training Instructor & Course Developer, US Air Force** | 2010 - 2014 |
| | Courses | |
| |   - Statistics for Cost Engineers | |
| |   - Statistics for Financial Analysts | |
| |   - Basic Excel for Financial Managers | |
| |   - Advanced Excel for Cost Engineers | |
| |   - Introduction to Crystal Ball for Cost Estimators | |
| |   - ICEAA Certification Test Prep Course Instructor | |

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| **PROFESSIONAL EXPERIENCE** | **PhD Data Science Intern, Boehringer Ingelheim** | Summer 2018 |
| |   - Utilized machine learning and statistical methods to produce cost projections of various market penetrations | |
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| | **PhD Data Science Intern, Verizon Wireless** | Summer 2015 |
| |   - Performed text analytics to analyze and find patterns of customer chat data | |
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| | **Operations Research Analyst, U.S. Department of Defense** | 2008 - 2014 |
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| | **Sr. Operations Research Analyst, U.S. Air Force** | |
| | (GG-13), LA Air Force Base, CA | 2012 - 2013 |
| | **Operations Research Analyst, U.S. Air Force,** | |
| | (GS-9/13), Hanscom Air Force Base, MA | 2008 – 2012; 2014 |
| |   - Collaborated with senior cost analysts to create accurate cost estimates for high-cost, high-visibility communication systems at various stages of development | |
| |   - Supervised cost team responsible for program with a $100 million annual budget | |
| |   - Modeled cost risk to manage future risk and uncertainty | |
| |   - Compiled program information by conducting interviews, querying databases and assessing historical data | |

- Managed all training activities for the cost group, including creating schedules and training plans, developing and teaching coursework
- Led analysis on acquisition programs, each valued over $700 million (top 5% of most costly programs)
- Liaised with multiple stakeholders including senior Air Force leadership, congress representatives, and users
- Presented and justified the methodology of completed cost estimates to stakeholders
- Assisted in creating cost estimation regression models for Air Force programs
- Reviewed and crosschecked program office estimates' methodologies
- Mentored and developed junior employees
- Initiated multiple data collection efforts with AF leadership
- Served as the cost estimator for a source selection, completing tasks such as complete review of contractors estimates and determination of their accuracy

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| **PROFESSIONAL SERVICE** | • INFORMS Chicago Chapter Volunteer Committee | 2022 |
| | • Association for Women in Science Group Mentor | 2021 - 2022 |
| | • Journal Peer Review: Health Care Management Science | 2020 |
| | • Industrial Engineering Student Transformational Group | 2020 - 2021 |
| | • INFORMS Conference Session Organizer | 2019 - 2021 |
| | • Member of Hispanic Heritage Month Planning Committee | 2019 |
| | • Vice President, Latino Organization of Graduate Students (LOGRAS) | 2018 - 2019 |
| | • ISyE Academic Program Review Student Panel | 2018 |
| | • Guest Speaker for Morehouse College Operations Research Student Seminar | 2018 |
| | • Georgia Tech Dean of Engineering Candidate Search Student Committee | 2017 |
| | • Summer Undergraduate Research in Engineering/Sciences Mentor | 2017 |
| | • Georgia Tech OMED Panelist & ISyE Representative | 2016 - 2020 |
| | • MIT Educational Counselor | 2008 - 2019 |

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| **SKILLS & CERTIFICATIONS** | **Programming Languages**<br>Proficient in: R, SQL, Python, ACE-IT<br>Experience in: Matlab, LaTeX<br><br>**Certifications** |
| | - ICEAA Certified Cost Estimator/Analyst (CCEA®)  2013<br>- Secret Security Clearance, Investigation completed in 2008, renewed in 2022 |