

# Bianica (Pint) Pires

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Social and Decision Analytics Lab  
Biocomplexity Institute of Virginia Tech  
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## EDUCATION

### 2014 **Ph.D., Computational Social Science**

George Mason University, Krasnow Institute for Advanced Study, Fairfax, VA  
Dissertation: *When People Rebel: A Computational Approach to Violent Collective Action*  
Committee: Andrew Crooks (Advisor), Robert Axtell, William Kennedy, Richard Medina

### 2003 **M.A., Business Administration – International Business**

University of Florida, Warrington College of Business, Gainesville, FL  
Graduated First in Class

### 2002 **B.S., Industrial & Systems Engineering**

University of Florida, College of Engineering, Gainesville, FL  
Graduated with Highest Honors

## EMPLOYMENT

- 2018-Present **Research Assistant Professor**, Social & Decision Analytics Laboratory,  
Biocomplexity Institute of Virginia Tech, Arlington, VA
- 2017-2018 **Research Scientist**, Social & Decision Analytics Laboratory, Biocomplexity  
Institute of Virginia Tech, Arlington, VA
- 2014-2017 **Postdoctoral Fellow**, Social & Decision Analytics Laboratory, Biocomplexity  
Institute of Virginia Tech, Arlington, VA
- 2012-2013 **Graduate Research Assistant**, Department of Computational Social Science,  
Krasnow Institute for Advanced Study, George Mason University, Fairfax, VA
- 2011-2012 **Embedded Analyst**, Palantir Technologies, McLean, VA
- 2008 **Graduate Research Assistant**, Department of Statistics, Volgenau School of  
Engineering, George Mason University, Fairfax, VA
- 2008-2011 **Managing Consultant**, IBM Global Business Services, Advanced Analytics &  
Optimization, Washington, DC
- 2005-2008 **Senior Consultant**, IBM Global Business Services, Advanced Analytics &  
Optimization, Washington, DC
- 2003-2005 **Consultant**, IBM Global Business Services, Advanced Analytics & Optimization,  
Washington, DC

## RESEARCH INTERESTS

My research interest involves understanding and exploring complex social systems using computational and quantitative methods, including agent-based modeling, social network analysis, geographic information systems (GIS). Through the integration of ABM, SNA, and GIS, I have

developed agent-based models that balance theory and empirical data in the creation of the environment and agents, including agents' communication networks and behavior. These models explore such research areas as collective action, social influence, knowledge sharing, attitude formation, and diffusion processes.

## GRANTS

- 08/2016 – 08/2017 Army Research Institute (ARI) Early Career Award, *Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization*. (\$128,460).  
PI: **Pires, B.** Co-PIs: Goldstein, J., Molfino, E., Ziemer, K.
- 07/2017-10/2017 State Council of Higher Education (SCHEV), *Creating a Data Profile of Counties/Cities with High Percent of Population with No Secondary Education*. (\$15,000).  
PI: **Pires, B.**
- 2016-2020 National Science Foundation (NSF), *Improving our Understanding of Catalysts for Innovation – Measuring Innovation in New Ways*.  
PI: Sallie Keller, Co-PIs: Korkmaz, G., **Pires, B.**, Shipp, S. (\$2,500,000).

## PUBLICATIONS

### Journal Articles

- Pires, B.**, Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A. 2018. Estimating Individualized Exposure Impacts from Ambient Ozone Levels: A Synthetic Information Approach. *Environmental Modelling & Software*, 103, pp. 146-157.
- Ziemer, K. S., **Pires, B.**, Lancaster, V., Keller, S., Orr, M., & Shipp, S., 2018, A New Lens on High School Dropout: Use of Correspondence Analysis and the Statewide Longitudinal Data System. *The American Statistician*. Forthcoming.
- Keller, S., Shipp, S., Korkmaz, G., Molfino, E., Goldstein, J., Lancaster, V., **Pires, B.**, Higdon, D., Chen, D., and Schroeder, A. 2018. Harnessing the Power of Data to Support Community-Based Research. *Wiley Interdisciplinary Reviews: Computational Statistics*. Forthcoming.
- Pires, B.** & Crooks, A., 2017, Modeling the Emergence of Riots: A Geosimulation Approach. *Computers, Environment and Urban Systems*, 61, pp. 66-80.

### Peer Reviewed Conference Papers/Presentations

- Pires, B.**, Goldstein, J., Higdon, D., Reese, S., Sabin, P., Korkmaz, G., Ba, S., Hamall, K., Koehler, A., Shipp, S., & Keller, S., 2017, *A Bayesian Simulation Approach for Supply Chain Synchronization*, in the post-proceedings of the 2017 Winter Simulation Conference (WSC), 3<sup>rd</sup> – 6<sup>th</sup> December, Las Vegas, NV.
- Pires, B.**, Goldstein, J., Molfino, E., & Ziemer, K., 2017, *Knowledge Sharing in a Dynamic, Multi-level Organization: Exploring Cascade and Threshold Models of Diffusion*, in the post-proceedings of the CSSSA's Annual Conference on Computational Social Science, 19<sup>th</sup>-22<sup>nd</sup> October, Santa Fe, NM.
- Pires, B.**, Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2015, *Towards an in silico Experimental Platform for Air Quality: Houston, TX as a Case Study*. Paper

presented at the Computational Social Science Society of the Americas (CSSSA) 2015, 29<sup>th</sup> October – 1<sup>st</sup> November, Santa Fe, NM.

**Pires, B.** & Crooks, A., 2016, *The Geography of Conflict Diamonds: The Case of Sierra Leone*, in the post-proceedings of the 2016 International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRIMS), 28<sup>th</sup> June – 1<sup>st</sup> July, Washington, DC, pp. 335–345.

**Pint, B.**, Crooks, A., & Geller, A., 2010, *Exploring the Emergence of Organized Crime in Rio de Janeiro: An Agent-Based Modeling Approach*, in the post-proceedings of the Second Brazilian Workshop in Social Simulation (BWSS), 24<sup>th</sup> – 25<sup>th</sup> October, São Bernardo do Campo, Brazil, pp. 7–14.

### Non-Refereed Reports

**Pires, B.** & Goldstein, J. 2017. Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization. Final Report to the Army Research Institute.

Keller, S., Shipp, S., Orr, M., Higdon, D., Korkmaz, G., Schroeder, A., Molfino, E., **Pires, B.**, Ziemer, K., & Weinberg, D. 2015. Leveraging External Data Sources to Enhance Official Statistics and Products. Final Report to the U.S. Census Bureau.

Haruta, A., Horvath, R., **Pint, B.**, & Zhang, J. 2011. High-end Talent Development and Retention in the ICT industry in Kenya. Nairobi: IBM Corporate Service Corps.

### Other Conference Presentations

**Pires, B.** and Goldstein, J., 2017, *Exploring Dynamic, Multi-level Interactions within an Organization: An Agent-based Modeling Approach*. Presentation at the Military Operations Research Society (MORS) Symposium, 19<sup>th</sup> – 22<sup>nd</sup> June, West Point, NY.

**Pires, B.**, Goldstein, J., Higdon, D., Korkmaz, G., Keller, S., Shipp, S., Hamall, K., and Koehler, A., 2016, *A Bayesian Simulation Approach for Supply Chain Synchronization*, Poster presented at the Winter Simulation Conference (WSC), 11<sup>th</sup> – 14<sup>th</sup> December, Arlington, VA.

**Pires, B.**, 2016, *Challenges and Opportunities for Modeling Violent Collective Action Computationally: Balancing Theory and Data*, Paper presented at the International Congress on Agent Computing, 29<sup>th</sup> – 30<sup>th</sup> November, Fairfax, VA.

**Pires, B.**, Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2016, *An in silico Platform for Environmental Coupling*. Poster presented at the Association for Public Policy Analysis & Management (APPAM), 3<sup>rd</sup> – 5<sup>th</sup> November, Washington, DC.

**Pires, B.**, Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2016, *An in silico Platform for Environmental Coupling*. Presentation at the International Society of Exposure Science (ISES), 9<sup>th</sup> – 13<sup>th</sup> October, Utrecht, The Netherlands.

**Pires, B.**, 2015, Crowd-Sourcing Big Data from Smartphone Apps for Transportation Research: Role of Statistics and Challenges. Panel conducted at the Joint Statistical Meetings (JSM), 8<sup>th</sup>-13<sup>th</sup> August, Seattle, WA. With: Feng Guo and Elaine Murakami.

**Pires, B.**, Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2015, *An in silico Platform for Environmental Coupling*. Poster presented at the International Symposium for Next Generation Infrastructure, 13<sup>th</sup> – 15<sup>th</sup> September, Washington, DC.

Keller, S., Schroeder, A., Shipp, S., Higdon, D., Korkmaz, G., Molfino, E., Orr, M., **Pires, B.**, and Ziemer, K., 2015, *Data: The new asset class*. Poster presented at the International Symposium for Next Generation Infrastructure, 13<sup>th</sup> – 15<sup>th</sup> September, Washington, DC.

- Pint, B.**, Crooks, A., 2013, *The Impact of a Slum's Social Dynamics and Geospatial Landscape on the Emergence of Riots: The Case of Kibera*, Presentation at the Association of American Geographies (AAG) Annual Meeting, 9<sup>th</sup> – 13<sup>th</sup> April, Los Angeles, CA.
- Pint, B.**, Horvath, R., Zhang, S., and Haruta, A., 2011, *High-end ICT Talent Development and Retention*, Stakeholders Workshop on e-Government Strategic Plan, 9<sup>th</sup> – 10<sup>th</sup> March, Nairobi, Kenya.
- Pint, B.**, Levitt, T., and Laskey, K., 2008, *Inferring Threat Group from IED Incident Reports*, The Military Operations Research Society (MORS) Symposium, 10<sup>th</sup> – 12<sup>th</sup> June, New London, CT.
- Sutherland, S., Ni, H. and **Pint, B.**, 2007, *Canada Post Strategic Network Optimization Model*, Presentation at the Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, 4<sup>th</sup> – 7<sup>th</sup> November, Seattle, WA.
- Pint, B.**, Cohen, J. and Ellison, L., 2003, *Case Study: Alpharma & the Brazilian Market*, in the post-proceedings of The Business Association of Latin American Studies (BALAS) Conference, 9<sup>th</sup> – 12<sup>th</sup> April, São Paulo, Brazil.

### Professional Presentations

- Pires, B.**, Crandell, I., Hamrick, K. 2018. *Identifying Science, Technology, Engineering, and Mathematics (STEM) Pathways*. Interim project presentation to NSF's National Center for Engineering Statistics (NCSES), 18<sup>th</sup> February, Alexandria, VA.
- Pires, B.** & Goldstein, J., 2017, *Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization*, Interim project review presentation to Army Research Institute, 17<sup>th</sup> March, Fort Belvoir, VA.
- Keller, S., Shipp, S., Higdon, D., Korkmaz, G., Molfinio, E., Orr, M., **Pires, B.**, Schroeder, A., Weinberg, D., Ziemer, K., 2015, *Leveraging External Data Sources to Enhance Official Statistics and Products*, Final project presentation to U.S. Census Bureau, 18<sup>th</sup> December, Suitland, MD.
- Pint, B.**, 2013, *The Geography of Conflict Diamonds: The Case of Sierra Leone*. Krasnow Institute for Advanced Study, George Mason University seminar series, 8<sup>th</sup> February, Fairfax, VA.
- Pint, B.**, 2011, *Corporate Service Corp Experience in Kenya*. IBM Advanced Analytics & Optimization brown bag series, 10<sup>th</sup> June, Herndon, VA.
- Pint, B.**, Horvath, R., Zhang, S., and Haruta, A., 2011, *High-end ICT Talent Development and Retention*, Final project presentation to the Minister of Information Communications and Technology, 18<sup>th</sup> March, Nairobi, Kenya.
- Pint, B.**, 2008, *Activity-Based Costing at U.S. Customs & Border Protection*. IBM Operations Analytics brown bag series, 17<sup>th</sup> October, Fairfax, VA.

### SKILLS

#### Research Methods/Techniques

Agent-based modeling, social network analysis, geographic information systems, large-scale data analysis, microsimulation, discrete-event simulation, database design and development, activity-based costing

#### Software/Programming Languages

Java, SQL, R, Python, MASON, NetLogo, ArcGIS, Palantir, UCINET, NetDraw, PostgreSQL, VBA, LaTeX

**Languages**

Portuguese (proficient), English (fluent)

**AWARDS AND RECOGNITIONS**

Best presentation nomination at the Military Operations Research Symposium (MORS), 2017

George Mason University funding to attend The Association of American Geographers (AAG) annual meeting, 2013

Palantir Technologies award for full tuition costs, 2011

IBM award for full tuition costs, 2007-2011

IBM Corporate Service Corp, 2011

Profiled on IBM.com, 2008

IBM Service Excellence Award, 2008

IBM BRAVO! Award, 2008

IBM Operations Analytics King of Delivering Value to the Client Award, 2007

IBM BRAVO! Award, 2005

U.S. Postal Service Account Excellence Award Winner, 2005

IBM Operations Analytics Hardest Worker Award, 2005

University of Florida funding to attend The Business Association of Latin American Studies (BALAS) Conference, 2003

**PROFESSIONAL MEMBERSHIPS**

2015 – present      Computational Social Science Society of the Americas (CSSSA)

2016 – present      The Institute for Operations Research and Management Sciences (INFORMS)

2015 – 2016          American Statistical Association (ASA)

Referee/Reviewer: Transactions in GIS