Joshua Evan Blumenstock

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Current Appointments

- **University of Washington**, Seattle, WA
  Assistant Professor, School of Information, 2013-*present*
  Adjunct Assistant Professor, Computer Science and Engineering, 2013-*present*
  Director, Data Science and Analytics Laboratory, 2013-*present*

Education

- **University of California, Berkeley**, Berkeley, CA
  Ph.D., School of Information, 2012
  M.A., Economics, 2010

- **Wesleyan University**, Middletown, CT
  B.A., Computer Science, 2003 (high honors)
  B.A., Physics, 2003 (high honors)

Past Positions

2012	*Post-Doctoral Scholar*, Yale University Department of Economics
2005-2006	*Founding Engineer*, HOTorNOT.com
2003-2004	*Fellow*, Thomas J. Watson Foundation
2002	*Intern*, Microsoft Research
2001	*Research Associate*, Harvard Institutes of Medicine

Honors and Awards

2013	*Early Career Faculty Award*, Intel
2013	*Doctoral Dissertation Award*, Consortium of Information Schools
2013	*Community Award*, USENIX Networked Systems Design and Implementation (NSDI'13)
2012	*O.S. Braunstein Prize (Best Student Paper)*, Pacific Telecommunications Council
2007-2011	*Berkeley Graduate Fellowship*, University of California at Berkeley
2009	*Dean's Normative Time Fellowship*, University of California, Berkeley
2006	*William V. Power Award*, University of California at Berkeley
2003-2004	*Watson Fellowship*, Thomas J. Watson Foundation
2003	*Phi Beta Kappa*, Wesleyan University
2003	*Senior Prize in Computer Science*, Wesleyan University
2000	*Johnston Prize in Physics*, Wesleyan University

Publications

Refereed Journal Articles

- Blumenstock, J.E. and N. Eagle (2012). Divided We Call: Disparities in Access and Use of Mobile Phones in Rwanda. *Information Technology and International Development*, 8(2), pp. 1-16.

- Blumenstock, J.E. (2012). "Inferring Patterns of Internal Migration from Mobile Phone Call Records," *Information Technology for Development*, 18(2), pp. 107-125.

- Gordon, G.J., R.V. Jensen, L.L. Hsiao, S.R. Gullans, J.E. Blumenstock, W.G. Richards, M.T. Jaklitsch, D.J. Sugarbaker, and R. Bueno (2003). Using Gene Expression Ratios to Predict Outcome Among Patients With Mesothelioma. *Journal of the National Cancer Institute*, 95(8), 598-605.

- Gordon, GJ, RV Jensen, LL Hsiao, SR Gullans, JE Blumenstock, S Ramaswamy, WG Richards, DJ Sugarbaker, and R Bueno (2002). Translation of Microarray Data Into Clinically Relevant Cancer Diagnostic Tests Using Gene Expression Ratios in Lung Cancer and Mesothelioma. *Cancer Research*, 62(17), 4963-4967.

- Fryer, RM, J Randall, T Yoshida, LL Hsiao, JE Blumenstock, KE Jensen, T Dimofte, RV Jensen, and SR Gullans (2002). Global Analysis of Gene Expression: Methods, Interpretation, and Pitfalls. *Experimental Nephrology*, 10(2), 64-74.

- Hsiao, LL, RV Jensen, T Yoshida, KE Clark, JE Blumenstock, and SR Gullans (2002). Correcting for Signal Errors in the Analysis of Microarray Data. *Biotechniques*, 32 (2), 330-337.

Refereed Conference Papers

- Blumenstock, J.E., Callen, M., Ghani, T., and Koepke, L. (2015). Promises and Pitfalls of Mobile Money in Afghanistan: Evidence from a Randomized Control Trial. *The 7th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '15)*, Singapore.

- Blumenstock J.E. (2014). Calling for Better Measurement: Estimating an Individuals Wealth and Well-Being from Mobile Phone Transaction Records. *The 20th ACM Conference on Knowledge Discovery and Mining (KDD '14), Workshop on Data Science for Social Good*, New York, NY.

- Young, W.M., Blumenstock J.E., Fox, E.B., and McCormick, T.M. (2014). Detecting and classifying anomalous behavior in spatiotemporal network data. *The 20th ACM Conference on Knowledge Discovery and Mining (KDD '14), Workshop on Data Science for Social Good*, New York, NY.

- Blumenstock J.E., Chokkalingham, R., Gaikwad, V., and Kondepudi, S. (2014). Probabilistic Inference of Unknown Locations: Exploiting Collective Behavior when Individual Data is Scarce. *The 5th Annual ACM Symposium on Computing for Development (DEV '14)*, San Jose, CA (27% Acceptance).

- Kelley, I. & Blumenstock J.E. (2014). Computational Challenges in the Analysis of Large, Sparse, Spatiotemporal Data. *The 6th ACM International Workshop on Data Intensive Distributed Computing*, Vancouver, Canada.

- Blumenstock, J.E. & Fratamico, F. (2013). Social and Spatial Ethnic Segregation: A Framework for Analyzing Segregation With Large-Scale Spatial Network Data. *The 4th Annual ACM Symposium on Computing for Development (DEV '13)*, Cape Town, South Africa (33% Acceptance).

- McCarthy, T, DeRenzi, B, Blumenstock, J.E., & Brunskill, E. (2013). Operationalizing Outlier Detection in Community Health Programs. *The 6th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '13)*, Cape Town, South Africa.

- Heimerl, K., Ali, K, Blumenstock, J.E., Gawalt, B., & Brewer, E. (2013). Expanding Rural Cellular Networks with Virtual Coverage. *the 10th USENIX Symposium on Networked Systems Design and Implementation (NSDI '13)*, Lombard, IL (22.2% Acceptance).

- Mehrohtra, A., Mohan, M., Nguyen, A., & Blumenstock, J.E. (2012). The Role of Gender in Mobile Phone Use: Quantitative Evidence from Rwanda. *Proc. 5th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '12)*, Atlanta, GA.

- Blumenstock, J.E. & Eagle, N. (2011). Mobile Divides: Gender, Socioeconomic Status, and Mobile Phone Use in Rwanda. *Proceedings of the 4th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '10)*, London, UK (14.1% Acceptance).

- Blumenstock, J.E. (2011). Using Mobile Phone Data to Measure the Ties Between Nations. *Proceedings of the 2011 iConference.* ACM Press, pp. 195-202.

- Blumenstock, J.E., Shen, Y., & Eagle, N. (2010). A Method for Estimating the Relationship Between Phone Use and Wealth. *Proceedings of the QualMeetsQuant Workshop at ICTD.*

- Blumenstock, J.E., Gillick, D., & Eagle, N. (2010). Who's Calling? Demographics of Mobile Phone Use in Rwanda. *2010 AAAI Spring Symposium Series.* AAAI Publications, pp. 116-117.

- Blumenstock, J.E. (2008). Size Matters: Word Count as a Measure of Quality on Wikipedia. *Proceedings of the 17th International Conference on the World Wide Web (WWW '08)* (pp. 1095-1096). ACM Press (11.7% Acceptance).

- Gemmell, J, R Lueder, JE Blumenstock, E Solomon, and G Bell (2003). Telephone, Television and Radio in the Home of the Future. *Internet and Multimedia Systems and Applications*, 2003, 263-268.

Book Chapters

- Aker, J.C. and Blumenstock, J.E. (2014). The Economic Impacts of New Technologies in Africa. In: Monga, C. & Lin, J.Y. *The Oxford Handbook of Africa and Economics.* Oxford University Press.

Research Papers and Ongoing Projects

- "Risk Sharing and Mobile Phones: Evidence in the Aftermath of Natural Disasters" (with Marcel Fafchamps and Nathan Eagle). *Revise and Resubmit, Journal of Development Economics.*

- "Designing Community Cellular Networks" (with Eric Brewer, Shaddi Hasan, Kurtis Heimerl, and Tapan Parikh). *In Submission.*

- "Violence and Precautionary Savings: Experimental Evidence from Mobile Phone-Based Salaries in Afghanistan" (with Michael Callen and Tarek Ghani). *Working Paper.*

- "A Society of Silent Separation: The Impact of Migration on Ethnic Segregation in Estonia." (with Ott Toomet). *Working Paper.*

- "How Do Labor Markets Equilibrate? Estimating the Effect of Local Labor Demand Shocks on Internal Migration and Local Wages" (with Dave Donaldson). *In Progress.*

- "Mobile-izing Savings: The Impact of a Mobile Phone-Based Defined-Contribution Plan in Afghanistan" (with Michael Callen and Tarek Ghani). *In Progress.*

- "Freedom to Speak: Increased Information Flow and Health Worker Outcomes in Tanzania"" *In Progress.*

Grants

- Gates Foundation (2015). Mobile Data for Socioeconomic Indicators (with Linus Bengtsson, Caroline Buckee, Andy Tatem, and Erik). Budget $754,794.
- UW Royalty Research Fund (2015). Migration and Networks: Theory and Evidence from Rwanda (with Xu Tan). Budget $39,881.

- USAID Development Innovation Laboratory (2014). High-Resolution Development Indicators. Budget: $ 200,000.
- UW Royalty Research Fund (2014). Segregation and "'Silent Separation": Using Large-Scale Network Data to Model the Determinants of Ethnic Segregation. Budget $ 39,657.
- IZA/DFID Growth and Labour Markets in Low Income Countries (2013). The Effect of Local Labor Demand Shocks on Internal Migration and Local Wages (with Dave Donaldson). Budget: $ 430,000.
- Google Faculty Research Award. Shock Signals: Modeling the Response of Dynamic Spatial Networks to Severe, Unexpected Shocks. Budget: $40,390.
- Intel (2013). Early Career Faculty Honor Award. Award: $40,000.
- Costco (2013). Research Gift: $60,000.
- Innovations for Poverty Action (2013). Mobile Phone-Based Defined-Contribution Accounts in Afghanistan (with Michael Callen and Tarek Ghani). Budget: $150,000.
- Institute for Money, Technology, and Financial Inclusion (2012). Case Studies of Mobile and Other Monies in Afghanistan (with Jan Chipchase). Budget: $93,434.
- Center for Economic Policy Research (2012). Private Enterprise Development in Low Income Countries: Using Mobile Money to Pay Afghan Salaries (with Michael Callen and Tarek Ghani). Budget: $35,500.
- Consortium on Financial Systems and Poverty (2012). Mobile Salary Payments in Afghanistan (with Michael Callen and Tarek Ghani). Budget: $33,836.
- National Science Foundation (2011). Doctoral Dissertation Improvement Award: Risk Sharing Over the Rwandan Mobile Phone Network. Budget: $11,500.
- International Growth Centre (2010). Social Networks, Phone Money Transfers, and Rainfall Shocks (with Marcel Fafchamps and Nathan Eagle). Budget: $70,000.
- Institute for Money, Technology and Financial Inclusion (2010). Banking on the Phone: Using Novel Sources of Data to Understand the Impact of Mobile Banking in Rwanda. Budget: $16,500.
- Networks, Electronic Commerce, and Telecommunications Institute (2010). Summer Research Grant: Mobile Phone Response to Natural Disasters. Budget: $4,500.
- Bill and Melinda Gates Foundation (2009). Summer Research Grant: Information and Communication Technologies for Agriculture. Budget: $3,500.
- Intel Research (2009). Cultural Politics of Technology and Consumption: Mobile Phone Use in Rwanda. Budget: $5,000.
- Thomas J. Watson Foundation (2004). Watson Fellowship: Outreach or Evangelism? Integrating Technology into Unexposed Communities: China, South Africa, Cape Verde, Argentina, Costa Rica. Budget: $22,000.

Invited Talks and Conference Presentations

- Mobile Data and Development, International Telecommunicaitons Union, Doha, Qatar (October 2014)
- Big Data for Development Symposium, World Bank, Washington, DC (October 2014)
- Information School, University of Maryland, College Park, MD (October 2014)
- Design Use Build seminar, University of Washington, Seattle (October 2014)
- Data and Development Forum, LIRNEAsia, Colombo, Sri Lanka (August 2014)
- Freeman Spogli Institute for International Studies, Stanford University, CA (June 2014)
- Electrical Engineering and Computer Science, University of California, Berkeley, CA (March 2014)
- Departmental Colloquium, Department of Economics, University of Washington, Seattle (Oct. 2013)
- 8th IZA/World Bank Conference on Employment and Development, Bonn, Germany (August 2013)

- Microsoft Faculty Summit, Redmond, WA (July 2013)
- Microsoft Research New England, Cambridge, MA (April 2013)
- Departmental Colloquium, Computer Science & Engineering, Univ. Washington, Seattle. (Jan. 2013)
- Change Seminar, Computer Science & Engineering, Univ. Washington, Seattle, WA. (Jan. 2013)
- IPA/PEDL Workshop on Small and Medium Enterprise in Developing Regions, Massachusetts Institute of Technology, Cambridge, MA (November 2012)
- USAID Workshop on Technology & Development, University of California, Berkeley, CA. (Oct. 2012)
- Conference on Financial Inclusion, Asian Development Bank, Bangkok, Thailand. (August 2012)
- Evaluating Mobile Innovations for Security and Accountability (E-MISA), University of San Diego, San Diego, CA. (June 2012)
- Stanford Seminar on Liberation Technologies, Stanford University, Palo Alto, CA. (March 2012)
- NSF Conference on Networks & Development, LSU, Baton Rouge, LA. (March 2012)
- Information School, University of Michigan, Ann Arbor, MI. (February 2012)
- Dept. of Agricultural and Resource Economics, Michigan State University, Lansing, MI. (Feb. 2012)
- Information School, University of Washington, Seattle, WA. (February 2012)
- Department of Economics, University of San Francisco, San Francisco, CA. (February 2012)
- Pacific Technology Consortium Annual Meeting, Honolulu, HI. (January 2012)
- Lyndon B. Johnson School of Public Policy, University of Texas, Austin, TX. (January 2012)
- Information School, University of Maryland, College Park, MD. (January 2012)
- Dept. Telecommunication, Information Studies & Media, Michigan State, Lansing, MI. (Jan. 2012)
- Dept. Communications, Culture & Technology, Georgetown University, Georgetown, D.C., (Jan. 2012)

Teaching

University of Washington

- INFX 598: Big Data and Development
- INFX 573: Introduction to Data Science (Probability and Statistics)
- INFX 574: Data Science Methods I (Machine Learning and Econometrics)
- INFX 575: Data Science Methods II (Scaling, Visualization, Networks)
- INFO 370: Applied Machine Learning
- IMT 554: Information Economics

University of California, Berkeley

- MIDS 299: Applied Machine Learning
- Econ 174/274: Global Poverty and Impact Evaluation (TA for Prof. Fred Finan)
- Info 197: Undergraduate Research Apprenticeship Program

Kigali Institute of Science and Technology, Rwanda

- KIST: Survey and Research Design and Methods

Advising

- Mohammad Raza Khan (PhD, University of Washington)
- Niall Keleher (PhD, University of Washington)

- Samuel Henly (PhD, University of Washington)
- Margaret Young (PhD, University of Washington)
- Philip Reed (PhD, University of Washington)
- Jordan Eschler (PhD, University of Washington)
- Tingting Wang (PhD, University of Washington)

Professional Affiliations and Activities

Journals

- Associate Editor, *Development Engineering*
- *Referee Service and Peer Review*: Proceedings of the National Academy of Sciences; Quarterly Journal of Economics; Journal of Development Economics; World Bank Economic Review; Journal of African Economies; Information Technology and International Development; Information Technology for Development; IEEE Pervasive Computing

Conferences

- *Conference Chair*: Evaluating Mobile Innovations for Security and Accountability, San Diego, 2012.
- *Program Chair*: Mobile Money Challenges and Innovations, Berkeley, 2013.
- *Senior Program Committee:* ACM/IEEE 7th International Conference on Information and Communication Technologies and Development (ICTD '15), Singapore, 2015.; ACM/IEEE 6th International Conference on Information and Communication Technologies and Development (ICTD '13), Cape Town, 2013.
- *Program Committee:* 5th annual Symposium on Computing for Development (DEV2014), Palo Alto, CA; 77th ASIS&T Meeting, Seattle, 2014; ACM 22nd International World Wide Web Conference (WWW2013), Rio de Janeiro, 2013; ACM 21st International Conference on Information and Knowledge Management (CIKM2012), Maui, 2012; ACM/IEEE 4th International Conference on Information and Communication Technologies and Development (WWW2010) London, 2010.
- *Referee Service and Peer Review*: IEEE/ACM Int'l Conference on Information and Communication Technologies and Development (ICTD); ACM Human Factors in Computing Systems (CHI); ACM Computer-Supported Cooperative Work (CSCW); ACM International Conference on Information and Knowledge Management (CIKM); AAAI Spring Symposium on Artificial Intelligence for Development (AAAI-D)