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BROWN UNIVERSITY

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Personal Information:
Citizenship: USA, Bulgaria   Gender: Female

Undergraduate Studies:
BA in Economics and International Studies, Emory University, *Summa Cum Laude*, 2010 (GPA 3.99)

Graduate Studies:
Ph.D. Candidate in Economics, Brown University, 2012 - present
    Thesis Title: Utilization of Mobile Phone Data for Economic Development
    Expected Completion Date: May 2017
MA in Economics, Brown University, 2013

References:
Professor Andrew Foster   Professor Jesse Shapiro
401-863-2537   401-863-2970
Andrew_Foster@brown.edu   Jesse_Shapiro_1@brown.edu

Professor Daniel Bjorkegren
401-863-3690
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Teaching and Research Fields:
Primary Field: Development Economics
Secondary Field: Applied Microeconomics, Health Economics

Teaching Experience:
Summer, 2016   Applied Research Methods, Summer@Brown, Pre-College, Instructor
Summer, 2013   Applied Research Methods, Summer@Brown, Pre-College, Teaching fellow for
                Angelica Meinhofer

Research Experience and Other Employment:
2013-2015   Brown University, Research Assistant to Andrew Foster
2010-2012   Brookings Institution, Senior Research Assistant to Barry Bosworth and Gary
                Burtless
2011-2012   Migration Policy Institute, Pro-bono Consultant under Kathleen Newland
2008-2010   Goizueta Business School, Research Assistant to Maura Belliveau
2007-2008   Emory University, Research Assistant to Mary Odem

<u>Professional Activities</u>:
Presentations
2016,2015,2014	North East Universities Development Consortium Conference (Boston, MA;
2016	Providence, RI; Boston, MA)
	Population Health Sciences Research Workshop (Boston, MA)
2016,2015	PopPov Conference on Population, Reproductive Health and Development
	(Washington, DC; Addis Ababa, Ethiopia)
2016	World Bank ABCDE Conference (Washington, DC)
2016	PODER Summer School on New Data in Development (Namur, Belgium)
2016	Brown University Microeconomics Seminar (Providence, RI)
2016,2015	Population Association of America Conference (Washington,DC; San Diego, CA)
2016,2015	Brown University Microeconomics Lunch (Providence, RI)
2015	NetMob Conference (Boston, MA)

Service
2016	Referee, World Bank Economic Review
2012-present	Graduate Student Representative, Brown University Community Council
2012-2016	Department Representative, Graduate Student Council

Affiliations
2014-present	S4 Fellow, Spatial Structures in the Social Sciences Initiative, Brown University
2013-present	Trainee, Population Studies and Training Center, Brown University
2013-present	Fellow, Graduate Program in Development, Brown University

<u>Honors, Scholarships, and Fellowships:</u>
2016-2017	Interdisciplinary Opportunity Award, Dissertation Completion Fellowship
2015-2016	National Institute of Child Health and Human Development, T32 Fellowship
2014	Social Science Research Council Dissertation Proposal Development Fellowship
2013-2015	National Science Foundation IGERT Fellowship
2012-2013	Stephen R. Ehrlich Fellowship, Brown University
2012	Charles Elias Shepard Scholarship for Graduate Study, Emory University
2009	Phi Beta Kappa

<u>Grants:</u>
2015-2016	Bill & Melinda Gates Foundation Grant (with Renato Casagrandi) $40,000

<u>Language:</u>
English (native), Bulgarian (native), Spanish (fluent), Russian (basic), French (basic)

<u>Software:</u>
STATA, SAS, ArcGIS, Matlab, LaTeX, Gephi, SVN/Git, Python, QGis, Hive
Experience with Hadoop, MapReduce, Pig

<u>Publications:</u>

Burtless, Gary and Sveta Milusheva. 2013. "Effects of Employer Health Costs on the Trend and Distribution of Social Security Taxable Wages," *Social Security Bulletin.* 73 (1).

Bosworth, Barry, and Sveta Milusheva. 2011. "Innovations in US Infrastructure Financing: An Evaluation." *The Brookings Institution Report.* https://www.brookings.edu/research/innovations-in-u-s-infrastructure-financing-an-evaluation/

Research Papers:

"Less Bite for your Buck: Using Cell Phone Data to Target Disease Prevention" (Job Market Paper)

Abstract: Infectious disease has a large economic and social burden that is magnified by infected travelers who spread diseases to the locations they visit. In this paper, I study malaria transmission in Senegal by quantifying the relationship between travel and spread of disease and showing its implication for targeting policies. Using individual mobile phone records for 9 million users in 2013, I estimate daily interregional movement and demonstrate substantial intertemporal and geographic variation in movement. I link this variation to clinic data on the incidence of malaria in order to calculate the probability a traveler is infected and to determine the impact in the area a traveler enters. Estimates indicate that an infected traveler entering a health facility's catchment area causes reporting of 1.6 additional cases. I apply the results to evaluate the potential for policies targeting travelers. At the same cost, strategic targeting of travelers from high-incidence locations would result in up to five times as many cases being averted as compared to current policies of randomly targeting travelers during the malaria season. These findings indicate how novel applications of big data combined with traditional health measures can enable improvements in policy to address negative spillovers from travel and lower the burden from communicable disease.

"Effect of Household Recombination on Retrospective Evaluation: Evidence from Matlab" with Andrew Foster

Abstract: Despite longstanding belief in certain circles that investment in primary health care and education can help to encourage reductions in inequality and increases in intergenerational economic mobility, evidence is scarce. This is due to the lack of systematically collected data from developing countries that links households over multiple decades. Bangladesh would seem an especially fruitful avenue for looking at these issues given international recognition of its success in improving basic health care and expanding primary education. In this paper we use newly collected survey data connected to the Matlab Demographic Surveillance System (DSS), maintained by the International Center for Diarrheal Disease Research in Bangladesh (ICDDRB), to take a first look at this issue. A novel insight from this paper is that standard methods for correcting sampling weights in panel data do not adequately account for the process of household formation and dissolution. We develop a new approach to weighting that requires the kind of information available in the context of a DSS, and use these weights to look at long term changes in educational investment of households in the Matlab area. We show that a substantial rise in average educational investment among children 6-16 has been accompanied by high levels of economic mobility but little reduction in economic inequality.

Research Papers in Progress

"Predicting Dynamic Patterns of Short Term Movement"

Abstract: Short term human mobility has important health consequences, yet measuring short term movement, especially in low income countries, using survey data has been difficult, and recent use of mobile phone data to study short term movement is only possible in locations where data can be accessed. Putting together data that is available for the majority of low income countries, I use Senegal as a case study to predict short term movement within the country. I focus on two main drivers of movement: economic and social. I find that some of the most important predicting factors of short term movement are related to distance between regions and the economic activity of regions as measured using lights data. I am able to explain almost 70% of the variation in short term movement using a number of measures of economic and social drivers. In addition, the predictions generated by my model can provide good estimates for the effect of short term movement on malaria.

"Long-Term Effects of the Matlab Maternal and Child Health and Family Planning Program on Cohort Survival and Health" with Jane Menken, Randall Kuhn, Patrick S. Turner, Tania Barham, Abdur Razzaque, Elisabeth Dowling Root, Andrew Foster, Warren Jochem, Gisella Kagy, Nobuko Mizoguchi

Abstract: Late in the 1970s, ICDDRB introduced its well-known maternal and child health and family planning program incrementally in approximately half the area in which their Matlab Health and Demographic Surveillance System collected data from all households at least quadrennially. Similar services were unavailable in the Comparison area for approximately a dozen years. Effects on period fertility and infant/child mortality were immediate. But did advantage last over the lifecourse? This is the first paper examining long-term effects (to 2014) on birth cohort survival and health. Treatment area survival increased almost immediately, with differences most pronounced in cohorts born 1978-87. Area differences narrowed thereafter. Cohort fertility results reveal sizeable bias when migrants are excluded from analysis. Further analysis will utilize extensive recently collected migrant follow-up data to continue this unprecedented opportunity for long-term evaluation. Preliminarily, when migrants are included, some cohorts show treatment area advantage in survival at older ages.

"Bias in Measuring Population Movement Using Mobile Phone Data: Utilization of Randomly Generated 'Robo-calls'"

Abstract: People's propensity to make calls or send text messages is a function of their environment and circumstances. Therefore, their location could influence the likelihood of making a call or text, which in mobile phone data translates to an observation of the person. If people are more likely to make calls or texts in certain locations, then there could be a bias in the measurement of short term movement over time. Considering the increased use of mobile phone data for studying questions surrounding short term movement, and the potential for this research to influence policy, it is important to understand bias that might be present in the data. In this paper, I use the calls and text messages received from companies that make calls en masse, which are exogenous in timing to population movement, in order to study whether bias exists in the likelihood of detecting an individual in a particular location. I determine the characteristics of the location that can predict a higher likelihood in bias, and use these to weight the data and mitigate the bias present. I analyze the implications the bias has in studying the impact of short term population movement.

"Understanding the Relationship Between Short Term Mobility and Long Term Migration Patterns" with Elisabeth zu Erbach-Schoenberg, Linus Bengtsson Erik Wetter, Andy Tatem