Cover Letter

Applicant: Corinne Andriola

E-mail: andriola@bu.edu

Phone: 925-200-7579

Address: 37 Egremont Rd. # 6, Brighton, MA 02135

Recommendation Letter Writer: Dr. Randall Ellis

Curriculum Vitae

Education:

- Boston University, Boston, MA, Sept. 2017 – present
  - Ph.D. student
- Oregon State University, Corvallis, OR, Jan. 2016-Jun. 2017
  - Post-baccalaureate B.S. Mathematics
- Whitman College, Walla Walla, WA, August 2008-May 2012
  - B.A. Economics, Minor: Mathematics

PhD Economics Courses, Boston University:

Completed:

Microeconomic Theory, 2 semesters
Macroeconomic Theory, 2 semesters
Introduction to Mathematical Economics, 1 semester
Statistics, 1 semester
Econometrics, 2 semesters
Public Finance, 1 semester
Health Economics, 2 semesters
Development Economics, 1 semester
Industrial Organization, 1 semester

Current:

Industrial Organization, second semester of 2 semester sequence
Development Economics, second semester of 2 semester sequence

Working Papers:

- A Simple Method for Pooling Cross Product Matrices to Maintain Confidentiality While Enabling Data Sharing Enhanced Linear Predictive Models, with co-authors Dr. Randall Ellis and Dr. Tzu-Chun Kuo
  -Presented at the 2019 Risk Adjustment Network Conference

- The Role of Wait Times in the Completion of Referrals to Specialty Care

Actuarial Exams:

- Exam P-Probability
- Exam FM – Financial Mathematics
- Exam MFE – Models for Financial Economics
- Exam C – Construction and Evaluation of Actuarial Models

Skills:

- C++
- Matlab
- Mathematica
- SAS
- Visual Basic for Applications
- Stata

Experience:

June 2019-present: Boston University, Boston, MA

Research assistant to Dr. Randall Ellis

September 2018-June 2019: Boston University, Boston, MA
Teaching assistant for the undergraduate introductory microeconomics class

October 2015: Copilots in Care, Palo Alto, CA, www.copilotsincare.com
Volunteer

- Modeled healthcare cost savings and program costs for an advance care planning intervention

May 2012-June 2015: Regence Health Insurance (Cambia Health Solutions), Portland, OR

July 2014-June 2015: Personalized Care Support (Palliative Care) Team
Consulting Research Analyst

- The team provided individualized support for patients with serious illnesses and their families
- Palliative care provider initiatives
  - Oncology Medical Home
    - Developed a grouper program to identify oncology episodes of care
    - Prepared a historical market analysis of oncology providers
  - Home based primary palliative care pilot
    - Provided study demographic projections for a NIH grant application
  - Provided analytics for case management and advance care planning programs
- Established a reporting infrastructure to:
  - Produce monthly reports on program performance metrics
  - Conduct claims audits for the palliative care medical benefit
- Prepared comments on CMS legislation with implications for palliative care patients

Feb. 2014-June 2014: Actuarial Delivery System Analytics Team
Actuary Assistant I

- Commercial accountable care analytics
  - Accountable care ties provider reimbursement to cost and quality targets
  - Produced data inputs for accountable care provider reporting and payment calculations
  - Analyzed the impacts of methodology changes
  - Provided analytics to support contract negotiations
- Bundled payment pilot program
  - Modeled the savings for an orthopedic surgery bundled payment program
  - Developed a grouper program to identify orthopedic episodes of care

Sept. 2012-Jan. 2014: Actuarial Unit Cost/Government Programs Team
Jun. 2013-Jan. 2014: Actuarial Analyst Assistant II
Sept. 2012-May 2013: Actuarial Analyst Assistant I

- Medicare Advantage HMO product and PPO accountable care programs
  - Developed analytics for provider contract negotiations and network decisions
  - Presented an overview of the Medicare Advantage HMO product for a department speaker series
- Developed models for Medicare Advantage provider reimbursement to:
  - Evaluate financial impact of CMS provider reimbursement methodology changes
  - Compare Medicare Advantage provider reimbursement methodologies on a consistent basis

Summer 2012: Medicare Pricing Team
Actuarial Intern

- Modeled the impact of adjusting health insurance benefits on member cost-sharing for the Medicare Advantage PPO product
- Analyzed rate filings to evaluate the competitiveness of Regence in the 2-50 small group market

Statement of Purpose

I am a third year economics PhD student at Boston University, completing my coursework and transitioning to the research phase of the program. I entered the program with the intention of pursuing research in health economics, driven by my experience working as an actuary at a health insurance company. Witnessing the scope available to insurers to drive profits by creating barriers to access to care, the extent to which providers manipulate practice patterns in response to changes in reimbursement, and the incredible complexity faced by patients trying to navigate the system led me to choose to leave the company, and instead focus my efforts towards improving the system. My primary research interests are using an empirical approach to market design in the health care industry to better align the incentives of insurers and providers with improvements in public health, and applications of behavioral economics to inform healthcare policy.

Working as an actuary, I spent two years in provider reimbursement analytics, which is concerned with managing healthcare provider networks and structuring payments to healthcare providers. After two years, I transitioned to a position as a consulting research analyst for the newly-formed palliative care team. The team provides individualized support for patients with serious illnesses and their families. I was responsible for the analytic support of provider, case management, and advance care planning programs. This move was driven by my desire to work on projects which focused directly on patient well-being and access to care. However, the efforts of the team were strictly circumscribed by the objectives imposed by upper management. This led me to choose to leave the corporate setting, and find an environment where I would be able to work on patient centered questions.

While at BU, my course work has focused on IO and Health, with those being my chosen fields. Dr. Randall Ellis is my advisor, and I began working for him as a research assistant in June of this year. I was brought on as a part of the team working on an AHRQ funded study to develop open-source risk-adjustment software for ICD-10, designed to take advantage of the new level of detail available relative to ICD-9. With risk-adjustment being a critical policy tool to address selection incentives for health plans, as well as an underpinning of much of empirical health research, it has been informative to be involved in the development of such a system. It has prompted me to think more critically about the strengths and weaknesses of the current approaches to risk adjustment, and I hope to be able to bring that perspective to future research. I am particularly interested in the work being done by Dr. Arlene Ash, another member of the team, at the University of Massachusetts Medical School on incorporating social determinants of health into risk adjustment.

I am at the beginning stages of research, and currently am working on two papers. The first, “A Simple Method for Pooling Cross Product Matrices to Maintain Confidentiality While Enabling Data

Sharing Enhanced Linear Predictive Models", which I am a co-author on along with Drs. Randall Ellis and Tzu-Chun Kuo, is focused on using the well-known property that regression cross-product matrices contain all of the information needed to run a regression with a linear specification to facilitate data sharing and improve computational efficiency. We are looking to demonstrate the value and feasibility of sharing health care data while maintaining patient confidentiality using cross-product matrices by seeking out international collaborators for an empirical study of cross-country differences in spend and utilization. I had the opportunity to present the project at the 2019 Risk Adjustment Network conference, and several researchers have expressed interest in collaborating with us. We are also looking to show the applications of using cross-product matrices to reduce the heavy computational demands of risk model development.

The second paper I am working on engages with the issue of patient compliance. In the context of escalating healthcare costs and lagging performance on quality measures in the United States, it is important to understand the factors that influence patient behavior regarding compliance. In particular, current research suggests that patients often fail to complete referrals to specialty care, with potentially serious consequences for long-term outcomes and costs. Wait times have been proposed as a possible driver of this behavior. However, the scarcity of data on wait times has limited the ability of researchers to test this hypothesis. As a solution to the current limitations of data on wait times, this paper proposes an algorithm for estimating wait times for specialists from administrative claims data. The paper then uses this approach to estimate the effect of wait times on the likelihood that a patient follows through on a referral for a selection of diagnoses, exploiting geographic variation in wait times across specialties and time, using the Truven Health Analytics MarketScan data.

In moving forward in research, I am interested in applying approaches from industrial organization and behavioral economics to better understand the policy levers available to improve patient access to high quality, appropriate healthcare. I am at the phase of building my familiarity with the health economics literature, and the opportunity to hear research presentations from active researchers in the field would be greatly beneficial.

Boston University College of Arts & Sciences
Department of Economics

270 Bay State Road
Boston, Massachusetts 02215
T 617-353-2741 F 617-353-4449

Randall P. Ellis
Professor

ellisrp@bu.edu
http://blogs.bu.edu/ellisrp/

October 9, 2019

Dear Ms. Brett Maranjian (maranjian@nber.org);

I am delighted to be writing a strong letter of recommendation in support of **Corinne Andriola** who would like to attend your NBER health economics research boot camp this December in Cambridge. As a third year student who will finish up her last PhD course this fall, she is an excellent candidate for this opportunity, and has already shown great promise in health economics.

Cori (as she is known) was a student in my PhD class EC 782 Health Economics II last fall where she did an outstanding job, receiving an A in the course. I have been impressed by her from the start because of her prior training and employment as an actuary working in the health industry. She wrote a fine term paper and midterm, and gave two excellent class presentations that used carefully prepared slides and summarized two complex papers that used high-level econometrics and theory with ease and confidence. She is a talented programmer, knowing not only SAS macro language but also SQL and R languages. She likes programming challenges.

Cori is just this month finishing our required "second year paper" for which she chose a very ambitious data intensive project on the relationship between waiting times and successful referrals to specialty treatment. In this paper she is using the 20 million observation Truven MarketScan data over a five year period to look at the completion rate of referrals to specific provider specialties and how this is influenced by the average waiting time in days between primary care and specialists in given market area. Since she is using claims data, she defines wait time as the interval between an initial primary care visit following one of her study diagnoses and a visit to a specialist who also notes that same condition. Her work, which I have seen drafts of but not the completed paper, first summarizes the average wait time to visit each provider specialty in a county following an initial visit to a primary care provider for a specific disease. Without observing patients who receive a referral but never act upon it, she is using a survival framework to examine how likely patients are with long average wait time between disease identification and a visit to a specialist differ in their rates of eventual visits. While endogeneity and selection issues may remain a concern, her approach is a creative and fruitful avenue to pursue.

In addition to this solely authored second year paper, Cori has two working papers with me and others written this summer while she served as a research assistant on an AHRQ funded study. For that project we are using 40 million person years of

data to develop new risk adjustment classification systems and formulas. Given her invaluable contribution to the project and ever willingness to chip in, I designated her as the lead author on a second paper for that project. In it we are proposing to encourage different state or country owners of confidential claims data to generate carefully specified Z'Z cross product matrices of outcomes and explanatory variables that should be sufficiently deidentified of able to share with outside researchers, and yet will permit a rich set of individual level linear regression models to be estimated. She not only wrote the first draft of this paper but presented it at an international conference of health economists, where it was well received. Altogether, Cori has shown herself to be a very strong data analyst, programmer, writer and organized presenter with great future potential.

I have talked to Cori and she is enthusiastic about attending. She is destined to be a productive health economist and your boot camp will increase her training in that direction.

Sincerely,



Randall P. Ellis
Professor