Joel Becker

To
NBER

January 20, 2022

To Whom It May Concern,

My name is Joel Becker; I am currently a second-year Ph.D. student in economics at New York University. I am writing to apply to your Innovation Research Boot Camp in July 2022.

I can be messaged at joelhbkr@gmail.com.

Professor David Cesarini is the writer of my letter of recommendation. He can be reached at dacesarini@gmail.com.

I have completed the following Ph.D. coursework: two semesters of core courses in each of Microeconomics, Macroeconomics, and Econometrics; one semester of 'Mathematics for Economists'; and a field course in each of 'Applied Econometrics' and 'Labor Economics'.

I leave my CV and description of motivation as well as past and future research attached.

Thank you for your consideration.

Yours sincerely,

Joel Becker

Joel Becker

✉ joelhbkr@gmail.com

Education

New York University, *PhD Economics* 2020 – Present

Harvard University, *Coursework during Predoctoral Fellowship* 2018 – 2020
Achievements: A (100%, joint top) in Linear Algebra and Real Analysis I (graduate credit).

University of Bristol, *BSc Economics and Econometrics* 2014 – 2018
Achievements: Top of cohort; first-class honours; thesis prize; highest ever mark in Applied Econometrics.

Research Papers

Resource profile and user guide of the Polygenic Index Repository, *Becker et al. (2021),* Nature Human Behaviour

Work in Progress

Mobile Money Scale-Up with Expert Forecasts, *with Rajeev Dehejia, Cyrus Samii, Cristian Pop-Eleches, Michael Gechter, and Alejandro Sanchez Becerra*

Character and Regulation of Fake News: Evidence from Facebook, *with Justin Katz*

Research and Other Professional Experience

Harvard University, NBER, *Predoctoral Fellow* 2018 – 2020

Analytics FC, *Co-owner, Consultant* 2016 – 2018

University of Bath, *Research Assistant* 2018

Institute for Fiscal Studies, *Communications (and Research) Assistant* 2017 – 2018

University of Bristol, *Research Assistant* 2017 – 2018

MessiSeconds, MessiMinutes, The12thMen, *Owner, Host, Producer* 2011 – 2017

Institute for Fiscal Studies, *Research Intern* 2016

Office of Ed Miliband MP, House of Commons, *Intern* 2015

Fellowships, Honors, and Awards

FTX, *FTX EA Fellowship,* $10,000 2022

Global Priorities Institute, University of Oxford, *Early Career Conference Programme* 2021

EA Long-Term Future Fund, *Career support grant,* $42,000 (declined) 2021

Forethought Foundation, *Global Priorities Fellowship,* £5,000 2021

NYU, Schmidt Futures, *Predoctoral Traineeship,* $5,000 2019 – 2020

Harvard University, *Philanthropy Advisory Fellowship* 2019

Belfer Center, Harvard University, *Emerging Tech Policy Network* 2019

Harvard University, *Pareto Fellowship* 2019

University of Bristol, *Deaton Prize* 2018

Skills and Interests

Programming languages: Bash, Julia, Octave, Python, R, Stan, Stata **Technologies**: GitHub, LaTeX
Audited courses: EC2140 Econometric Methods (Harvard), EC2450B Public Economics and Fiscal Policy (Harvard), EC2880 Economics of Science (Harvard), 18.0651 Matrix Methods (MIT)
Interests: Data visualization, expert forecasting, global priorities research, meta-science, piano, soccer (playing, analytics), social media, social science genomics

Research Description

Joel Becker

I aspire to produce economics research that might lead to persistent and positive downstream changes to long-term progress. My past and future research projects are motivated by this central theme.

Past research

Before starting my Ph.D., I worked as a Predoctoral Fellow under the supervision of David Cesarini, David Laibson, and Daniel Benjamin. I assisted research in 'genoeconomics,' the field that incorporates genomic data into economics. The main output from this work is a paper published in Nature Human Behaviour on which I am the first author. In this paper, we construct a large repository of polygenic scores—DNA-based predictors of outcomes of interest—for use by social scientists.

The reasons for my excitement about this field were two-fold. First, I felt that the research could lead to a trajectory change in social science research. One pathway to this would involve using polygenic scores for social scientific traits to absorb residual variation in social scientific statistical models. This practice would, in turn, lead to increased statistical power in many relevant settings. Second, genoeconomics values technical skills such as software engineering especially highly. This feature helped me develop a comparative advantage in skills that should transfer well to other fields of economics research.

Future research

My future research ideas align well with the economics of innovation. Please note that, since I am still in the coursework stage of my Ph.D., all ideas are in early stages.

This year I will be working with Dr. Benjamin Tereick on 'long-term forecasting' research. We are interested in the theoretical question of how to appropriately incentivize forecasters to give probability estimates for events whose outcome may not be resolvable in the short-term. Pertinently to innovation economics, we are also interested in the empirical question of how well forecasters can predict future innovation. The current plan is to use biotechnology as a case study. We will leverage our theoretical work to ask: what do the most accurate short-term forecasters of progress in biotechnology believe about long-term innovation in this area?

I would also like to produce research focused on other intersections between forecasting and innovation. With this in mind, I read Professor Van Reenen's recent paper with coauthors "Do Well Managed Firms Make Better Forecasts?" with interest. The authors speculate that "the higher productivity [...] of well managed firms may rest [on the] better allocation of factors [due to superior forecasting]". I am interested in thinking about answering

this question, as well as related questions at the intersection between forecasting and innovation. Your boot camp would provide me with the tools and exposure necessary to do so.

Another research idea comes from my time auditing Professor Richard Freeman's relevant 'science of science' course. As part of this class, I wanted to take to data a model in which economics journal editors might prefer to publish the work of professors or students from their home institution. There may be an equity-efficiency trade-off: editors want to publish the best research, regardless of authors' institutional affiliations, but it may cost them additional effort to see the work of scholars who do not present at seminars that the editors attend. I have now obtained the data necessary to explore this idea further.

Given my motivations, I would like to research the 'economics of AI' but have not yet found a suitable on-ramp. One thought I have is to describe the degree to which more general methods have out-competed more specialized techniques in AI. The 'generality' of a method could be operationalized by classifying different subfields/tasks and asking how unequal the relative frequency of method utilization is across tasks. But I am not especially attached to this; I would hope to use the innovation research boot camp to discover more about frontier questions, methods, and data in this area.

Finally, I have a project studying the welfare impacts of innovation in communication technologies with my former colleague Justin Katz. Three years ago, we successfully applied for access to Facebook data. We will be able to work on the data for the first time soon. Our original proposal is somewhat outdated given the delay in data access, but we are excited to be thinking about new research questions.

New York University
A private university in the public service

Faculty of Arts and Science
Department of Economics
19 West Fourth Street, 6th Floor
New York, NY 10012-1119

DAVID CESARINI
Associate Professor

Tel.: 212.992.8683
FAX: 212.995.3932
david.cesarini@nyu.edu

January 26, 2022

Dear Committee,

I am writing in support of Joel Becker, who is applying for the NBER Innovation Research Program. The bottom line is that I enthusiastically recommend him for your program.

Joel worked for me (and David Laibson (Harvard) and Dan Benjamin (UCLA)) as a Full-Time Research Assistant based at the National Bureau of Economic Research for two years, starting in July of 2018, doing research in social-science genomics. During Joel's RAship, we periodically worked quite closely. During periods of close collaboration, we'd have several daily email exchanges and often meet virtually over Skype or Zoom. In the fall of 2020, his RAship ended and he enrolled in the PhD program here at NYU. We have stayed in touch and talk every month or so. I therefore know very Joel well and feel confident saying that were you to admit him, you'd be impressed by his intellect, resourcefulness and knowledge. I imagine that you'd find his knowledge of the rapid advances in genetics especially valuable. Joel has spent a lot of time thinking hard about a number of issues in this space that policymakers are, at best, only beginning to grapple with. I believe economists have a lot to contribute to the public conversation that is already underway.

During his RAship, Joel worked on three major projects (in addition to many smaller tasks).

The first was the creation of a repository of polygenic scores – which are predictors constructed from genomic data – for a range of outcomes of interest to social scientists (e.g., educational attainment, general risk tolerance, subjective well-being). This project required Joel to merge data across many datasets, understand and improve coding pipelines, and make his own workflow and scripts. As the main analyst on this project, Joel was the first author on the paper, which was published in the journal *Nature Human Behaviour* last year.

The second project involved developing methods for better detection of genetic variants associated with late-onset Alzheimer's disease. This project involved using conducting power calculations and implementing generalizations of meta-analysis on genome-wide data from

several sources. The third project used a change in the UK compulsory schooling laws to estimate the effect of education on mental health and whether this effect is heterogeneous in a person's genetic risk for depression. As part of this project, Joel cleaned the data, constructed the mental health and genetic variables, and conducted most of the preliminary analyses.

I would be remiss not to comment on the fact that Joel's first-year coursework performance at NYU was disappointing. The blunt truth is Joel initially had a very, very hard time adjusting to the COVID disruptions, especially the sudden transition to a virtual instruction format. This was reflected in his first-year academic performance, which was near the bottom of his cohort. As you can easily see from inspecting Joel's grade transcripts, the pandemic episode is clearly an outlier: he is normally an outstanding student. For example, while he was working as a full-time research assistant, he took "Math 23a: Linear Algebra and Real Analysis I" at Harvard for graduate credit, earning a perfect grade of 100%. Most importantly, I was thrilled to see that when in-person resumed at NYU, he quickly regained his footing, achieving a near-perfect GPA in the fall semester of 2021.

In summary, I strongly recommend Joel to your program and believe he has great potential as a budding researcher and economist. As a person, he is easy to get along with, naturally inquisitive, entrepreneurial, good-natured and always eager to make contributions to the public good. Please do not hesitate to contact me if I can provide any other information that would be helpful: dac12@nyu.edu.

Sincerely,



David Cesarini