MATTIE TOMA
www.mattietoma.com
mattietoma@g.harvard.edu

EDUCATION

2010-2014	B.A. in Economics, **University of Chicago**, Honors and Phi Beta Kappa
2016-Present	Ph.D. Candidate in Economics, **Harvard University** Thesis Title: "Essays in Behavioral and Experimental Economics" Expected Completion Date: May 2022
Primary Fields:	Behavioral Economics, Experimental Economics, Applied Microeconomics
Secondary Fields:	Development Economics, Public Policy

RESEARCH

Job Market Paper:
Toma, M. and E. Bell. "Understanding and Improving Policymakers' Sensitivity to Program Impact"

Policymakers routinely make high-stakes decisions of which programs to fund. Assessing the value of a program is difficult and may be affected by bounded rationality. In an experiment with policymakers in the U.S. government, we find that respondents' valuations of programs are inelastic with respect to the program's impact. A complementary experiment among a representative sample of the general public reveals even more pronounced inelasticity in a population less familiar with making program funding decisions. We design and test two portable decision aids, one which presents two alternative programs side-by-side rather than in isolation and another which translates total program cost into an annual cost per person impacted. The decision aids increase elasticity by 0.20 on a base of 0.33 among policymakers and by 0.21 on a base of 0.21 among the general public. We provide evidence that cognitive noise—noisy assessments of complex inputs—is a mechanism that can help explain the observed inelasticity of program valuation with respect to impact.

Publications:
Bessone, P., G. Rao, F. Schilbach, H. Schofield, and M. Toma. (2021) "The Economic Consequences of Increasing Sleep Among the Urban Poor," *Quarterly Journal of Economics,* 136(3): 1887–1941
Media: Freakonomics Radio, Econimate, NBER Digest, VoxDev, MIT News

The urban poor in developing countries face challenging living environments, which may interfere with good sleep. Using actigraphy to measure sleep objectively, we find that low-income adults in Chennai, India sleep only 5.5 hours per night on average despite spending 8 hours in bed. Their sleep is highly interrupted, with sleep efficiency—sleep per time in bed—comparable to those with disorders such as sleep apnea or insomnia. A randomized three-week treatment providing information, encouragement, and improvements to home sleep environments increased sleep duration by 27 minutes per night by inducing more time in bed. Contrary to expert predictions and a large body of sleep research, increased nighttime sleep had no detectable effects on cognition, productivity, decision-making, or well-being, and led to small decreases in labor supply. In contrast, short afternoon naps at the workplace improved an overall index of outcomes by 0.12 standard deviations, with significant increases in productivity, psychological well-being, and cognition, but a decrease in work time.

Rao, G., S. Redline, F. Schilbach, H. Schofield, and M. Toma. (2021) "Informing Sleep Policy Through Field Experiments," *Science,* 374(6567): 530-533.

Sleep science has made tremendous progress through both laboratory and community-based studies. We now have a better understanding of the neurobiology of sleep and the importance of healthy sleep for physical and mental functioning, and observational studies raise serious concerns about widespread sleep deprivation across the world. But why do people not sleep more, given the large predicted benefits? The field of economics provides a useful framework to think about this question. A standard economic model would posit that, when deciding how much time to spend in bed, people weigh the benefits of sleeping more against the costs, while facing a fixed overall "time budget". When viewed through this lens, it becomes evident that we know surprisingly little about the calculus of sleep in people's everyday lives. We discuss how field experiments can help fill these gaps in our knowledge. Using affordable and accurate wearable devices such as actigraphs to measure sleep, field experiments can combine the strengths of lab and population studies. They use controlled, randomized variation in sleep—as in clinical trials—to measure the causal effect of increased sleep in natural environments on real-world costs and benefits. They can do so over longer time frames and with larger sample sizes than is feasible in the lab.

Kappes, H., M. Toma, R. Balu, N. Chen, R. Johnson, J. Leight, S. Omer, M. Steffel, K. Trump, D. Yokum, R. Burnett, E. Safran, and P. Debroy. (2021) "Lessons for COVID-19 Vaccination from Eight Federal Government Communication Evaluations," *Accepted, Behavioral Science and Policy*

We discuss eight randomized evaluations intended to increase vaccination uptake conducted by the US General Services Administration's Office of Evaluation Sciences (OES). These evaluations had a median sample size of 55,000, deployed a variety of behaviorally-informed direct communications, and used administrative data to measure vaccination uptake. The confidence interval from an internal meta-analysis shows changes in vaccination rates ranging from -0.004 to 0.394 percentage points. Two studies yielded statistically significant increases, of 0.59 and 0.16 percentage points. The other six were not statistically significant, although the studies were powered to detect effect sizes in line with published research. This work highlights the likely effects of government communications and demonstrates the value of conducting rapid evaluations to support COVID-19 vaccination efforts.

Toma, M. (2015) "Missed Shots at the Free-Throw Line: Analyzing the Determinants of Choking Under Pressure," *Journal of Sports Economics,* 18(6): 539-559
Media: Hidden Brain (NPR)

Choking under pressure represents a phenomenon in which individuals faced with a high-pressure situation do not perform as well as would be expected were they performing under normal conditions. In this article, I identify determinants that predict a basketball player's susceptibility to choking under pressure. My analysis draws on play-by-play data from ESPN.com that feature over 2 million free-throw attempts in women's and men's college and professional basketball games from the 2002-2013 seasons. Using regression analysis, I explore the impact of both gender and level of professionalism on performance in high-pressure situations. I find that in the final 30 seconds of a tight game, WNBA and NBA players are 5.81 and 3.11 percentage points, respectively, less likely to make a free throw, while female and male college players are 2.25 and 2.09 percentage points, respectively, less likely to make a free throw, though statistical significance cannot be established among NCAA women. The discrepancy in choking between college and professional players is pronounced when comparing male college players who do and do not make it to the professional level; the free-throw performance of those destined to go pro falls 6 percentage points more in high-pressure situations. Finally, I find that women and men do not differ significantly in their propensity to choke.

Research Papers in Progress:

Toma, M. "The Role of the Placebo Effect in Classroom Interventions"

Beliefs about the efficacy of a treatment have important effects on the treatment's success in the medical domain. This project looks at whether the "placebo effect" occurs in the social sciences as well by considering the context of student effort. I address this question by experimentally varying high school students' beliefs about the efficacy of an intervention to improve performance on a math quiz and examine the impact on quiz scores. The experimental design allows for an investigation of the extent to which effects might be driven by increased engagement with the intervention versus by a change in beliefs alone. The finding that student beliefs affect intervention outcomes would not only help researchers and practitioners understand when or whether a classroom intervention will work, but also points to the communication of optimistic beliefs as a tool to increase the efficacy of these interventions.

Exley, C., R. Fisman, J. Kessler, and M. Toma. "Transparency Gaps: Gender Differences in Performance Revelation"

Using observational data on over 16,000 undergraduate students, we show that, when students are provided with an opportunity to reveal more or less information about their grades on their transcript, women are more likely to reveal their grades when doing so pulls down their GPA. We call this phenomenon the gender transparency gap. We complement this finding with a large-scale online experiment, which explores one potential mechanism underlying this transparency gap: women expect to face more discrimination than men, and also expect to benefit more from transparency. We show that expected discrimination against women is smaller when more information on workers' past performance is provided.

EMPLOYMENT

2020-Present	Office of Evaluation Sciences, Associate Fellow
2016-2017	Harvard University, Research Assistant for Gautam Rao
2014-2016	University of Chicago, Research Professional for Steven Levitt
2013	Council of Economic Advisers, Intern
2012	National Economic Council, White House Intern

HONORS, SCHOLARSHIPS, AND FELLOWSHIPS

2021	Character Lab Research Network Grant ($24,000)
2020 and 2021	Global Priorities Fellowship (GBP 5,000 annually)
2019	Bok Center Certificate of Distinction in Teaching
2019	J-PAL North America Health Care Delivery Initiative Grant ($13,025.50, Unused)
2019	Sloan NOMIS Summer School on the Cognitive Foundations of Economic Behavior
2019	Mind Brain and Behavior Graduate Student Grant Award ($10,000)
2018	Harvard GSAS Professional Development Fund ($2,500)
2018 and 2019	T32 Trainee NIH Research Training Program in Sleep, Circadian, and Respiratory Neurobiology ($23,844 and $24,324)
2017	briq Institute on Behavior and Inequality Summer School in Behavioral Economics
2014	David S. Hu Award: outstanding undergraduate thesis in economics
2013	Student Marshal: highest honor in the University of Chicago College

PROFESSIONAL ACTIVITIES

Presentations	University of Chicago (scheduled); Economic Science Association (scheduled); APPAM (scheduled); Harvard University; Monash University; Early-Career Behavioral Economics Conference; Advances in Field Experiments (University of Chicago); Evidence to Action (Berkeley and the Center for Effective Global Action); Forethought Seminar Series; Mind Brain Behavior (Harvard University)
Referee	Quarterly Journal of Economics; Management Science; American Economic Journal: Applied Economics; Journal of Economic Behavior and Organization; Journal of Economic Psychology; Journal of Behavioral and Experimental Economics; PLOS One; Applied Economics; Journal of Sports Economics; Journal of Behavioral Public Administration; International Journal of Sport Psychology
University Activities	Philanthropy Advisory Fellowship: Harvard University Effective Altruism Student Group (Executive Director)

TEACHING EXPERIENCE

Spring 2020	GenEd 1066 Rationality (Undergraduate), Harvard University, Course Development and Head Teaching Fellow for Steven Pinker
Fall 2019	Ec1058 Experimental Economics (Undergraduate), Harvard University, Teaching Fellow for Lucas Coffman
Spring 2019	HBSDOC 4075 and Ec2042 Experimental Methods in the Social Sciences (Graduate), Harvard Business School and Harvard University, Teaching Fellow for Lucas Coffman
Fall 2018	Ec2040 Experimental Economics (Graduate), Harvard University, Teaching Fellow for Benjamin Enke

REFERENCES

Professor Gautam Rao
Harvard University
grao@fas.harvard.edu

Professor Benjamin Enke
Harvard University
enke@fas.harvard.edu

Professor Christine Exley
Harvard Business School
clexley@hbs.edu

Professor David Laibson
Harvard University
dlaibson@harvard.edu

Professor Matthew Rabin
Harvard University
matthewrabin@fas.harvard.edu