MAXIMS FOR THINKING ANALYTICALLY

THE WISDOM OF LEGENDARY
HARVARD PROFESSOR
RICHARD ZECKHAUSER

BY DAN LEVY

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Estimation Exercise

	Quantity to be estimated	Your 1% sur- prise point	Your best guess	Your 99% sur- prise point
1	Birth rate in Andorra 2020 per 1,000 population			
2	Air Distance from Amsterdam to Atlanta, in kilometers			
3	Number of votes Hillary Clinton got in the 2016 U.S. Presidential Election from voters in the state of Alabama			
4	Total area of Afghanistan (in square kilometers)			
5	Number of McDonald's restaurant locations in the United States, in 2020			
6	Population of Algeria, in 2020			
7	Life Expectancy at birth in Angola, 2020, in years.			
8	Total Exports in Argentina in 2017, in US dollars			
9	Number of votes that Mitch McConnell received to win his Kentucky Senate seat in the 2020 Elections			
10	Total worldwide net sales of Apple in 2020, in U.S. dollars			

Answers to the Estimation Exercise

	Quantity to be estimated	Correct answer	Was the correct answer below your 1% sur- prise point or above your 99% surprise point?
1	Birth rate in Andorra 2020 per 1,000 population	7 births/1000	
2	Air Distance from Amsterdam to Atlanta, in kilometers	7,082	
3	Number of votes Hillary Clinton got in the 2016 U.S. Presidential Election from voters in the state of Alabama	729,547	
4	Total area of Afghanistan (in square kilometers)	652,230	
5	Number of McDonald's restaurant locations in the United States, in 2020	13,226	
6	Population of Algeria, in 2020	42,972,878	
7	Life Expectancy at birth in Angola, 2020, in years.	61.3	
8	Total Exports in Argentina in 2017, in US dollars	\$58.45 billion	

9	Number of votes that Mitch McConnell received to win his Kentucky Sen- ate seat in the 2020 Elec- tions	1,222,749	
10	Total worldwide net sales of Apple in 2020, in U.S. dollars	\$274.52 bil- lion	

APPENDIX A – GRATITUDE

One of the most gratifying aspects about writing this book has been the enthusiastic response from Richard's former and current colleagues, coauthors, students, and collaborators. I received many expressions of gratitude toward him in response to my initial request for contributions. Below is a sample of these expressions; a more complete list can be found at:

bit.ly/gratitude-richard

Alan Berger

"I first met Richard 15 years ago when I was a young associate professor at the Harvard Design School. My dean at the time, Alan Altshuler, recognized that my intellectual curiosities and interests were broader than my department's capacities and pushed me to engage faculty outside the school. This was at a time when interdisciplinary work in my department was not encouraged. It is not an overstatement to say Richard opened an entire world of interdisciplinary thinking to me. Remarkably, he valued my opinions and respected my pedagogical world, which is set upon much more artistic and subjective ways of working than his field. It's fair to say I have become more analytical since collaborating with Richard, and he certainly has a better eye for design. We have published several papers together about urban planning and design, and the environment – from mine reclamation, to suburban development and transportation, to coastal

resilience. With every paper we write, Richard finds a way to change my thinking and help me see things anew."

Justice Stephen Breyer

"In Henry IV Shakespeare the old judge says to his college mate, "Those were the days." That they were, Dick -- when we were teaching regulation at the Kennedy School (ranging from elevator regulation in Massachusetts to natural gas regulation in Oklahoma). We'd think of great lines for our joint writings (without regulation will DNA discoveries lead to 10,000 copies of General Franco? Or, mosquito-men?). We learned, we wrote, we taught, we became friends. You have done great work, my friend. And I am delighted this book will be produced about you."

Cuicui Chen

"When I was planning on going on the job market, my husband and I also started thinking about having a second child. I was not sure if the timing was right. I went to see Richard about this. He said, 'Cuicui, just do what you think is best for your family; if a school thinks negatively of you just because of your family status, that school will not be worth your time and energy anyway.' I adopted his advice and am very happy with what I have now."

Cary Coglianese

"I co-taught with Richard for several years when I was on the faculty at the Kennedy School of Government. I learned as much from Richard as did any student in our jointly taught doctoral research seminar. 'Aim for grandeur,' is the maxim I recall Richard saying repeatedly. By that he meant that students should think big in terms of what their research contributes. They should see themselves not as mere technicians but as full participants in a grand scholarly tradition. They should situate their work so that it speaks to timeless questions about the human condition.

I came to see this maxim as one of the secrets of Richard's remarkable success as a scholar and a teacher. What could be grander than decision making? The field of decision theory in which Richard has been such a pioneer speaks to what is central to all of our lives. Decisions make up our lives. They affect us and they affect others. Research that advances our understanding of decision-making speaks directly to the most vital aspects of the human condition.

Richard has not only empirically illuminated how people make decisions, but he has also developed vital analytic tools for how they can make still better ones, especially in the face of inevitable uncertainty and trade-offs. Through his ever-popular Kennedy School course on 'Analytic Frameworks for Policy' – equally grand in its title and its aim – Richard has passed along essential decision tools to generations of students who have gone on to hold crucial positions of leadership around the world."

Suzanne Cooper

"Richard's intellectual contributions to our understanding of complex policy issues have been extraordinary. That he is a wonderful mentor and colleague only adds to all we have gained from him. And personally, I owe him a great debt for his support and advice in my own professional development, dating back to my first encounter with HKS over 28 years ago. Thank you Richard!"

Victor R. Fuchs

"As one of the outstanding economists of his generation, Richard Zeckhauser has a rare combination of a nuanced command of theory, extensive high quality empirical research, and seminal analyses of public policy problems. I am indebted to him for his invaluable insights in my research in health economics and for his encouragement of my career."

John Haig

"I took Richard's class in 1981 as student at Harvard's Kennedy School. The lessons he taught me – about probability, decision analysis and risk management – have led me to make vastly better decisions throughout my life, both professionally and personally. The methods and ways to frame problems I learned in his class are by far the most influential learnings from any class I have ever taken. I feel honored to now have him as a friend and colleague."

Jody Heymann

"There are so many things Richard taught me that transformed the quality of work I am able to do that the list of all I am grateful for is long. His teaching came out best in his commitment to helping students solve tough problems and believing in our capacity to make a difference.

Richard gave graduate students in his courses real world problems—complex and messy—and threw us into the water to try and solve them. He showed us all that the tools he taught were within our reaches to use to help people advance public goods, not because we would get perfect answers but because the tools would accelerate progress.

When I had a wild idea as a masters student that I would try and solve a decision tree about what to recommend around breastfeeding to HIV mothers even though no one knew the transmission rate at the time of HIV in breast milk—instead of saying that's ridiculous, he said that's a great challenge, let's take it on. That led to work with the World Health Organization and a career of being willing to take on complex problems.

It also transformed how I would teach. Students I have who are now working to eliminate detention of migrant children in the US, eliminate child marriage globally, and advance equality within and between groups and countries. They represent just one small part of Richard's real impact across generations. Richard's faith that bringing values and rigorous analytic methods together could help bring insights to how to address profoundly difficult problems, and that no one was too early in their career to contribute, has made a difference not just for his students but for his students' students and their generations into the future."

Elon Kohlberg

"I was introduced to Richard by our mutual friend Jerry Green. When telling me why I would enjoy meeting Richard, Jerry said that Richard had an "unbounded IQ." I never heard this expression before or after, and I can't think of a better way to describe him. Richard is a free spirit. His imagination roams with no regard to demarcations of context. His ability to see beyond boundaries is a joy to behold!"

Lee Hsien Loong

"I attended Richard's course in 1979–1980. I was probably his first student from Singapore. Since then, many more Singapore students on the MPA program have found the course as rigorous and stimulating as I did more than 40 years ago. Many came back to serve in the government, and were inspired to apply the techniques and mindsets they had absorbed in the course.

Singapore tries hard to apply analytical frameworks to policy problems. I believe this has made a material difference in the quality of our public administration. For this, all of us who have had the privilege of having Richard as a teacher and a friend are very grateful.

Your course left such a strong impression that after 40 years I can still remember many of the things we discussed. I have often relied on them, and perhaps even more often unconsciously, to make sense of some data or issue, and for this I will always be grateful."

Todd Rogers

"Richard was the first Harvard Kennedy School (HKS) faculty to reach out to me when I received my job offer to be an assistant professor. We spoke for a long time and I thought "Wow! This guy is such a broad thinker. HKS is going to be amazing." When we began collaborating on a social psychology project about "paltering" he was wrapping up a philosophy journal article, had finished a children's book, and was considering an art history collaboration. Richard is an inspiring model of a creative, curious, fearless, insightful, and open thinker. I'd feel successful if any one of those attributes were used to characterize my thinking."

Benjamin Schneer

"Even though the Kennedy School is full of many very busy people, I have noticed that Richard is always able to make time for his students and his colleagues. When I started as a new assistant professor, we had lunch several times and, as I imagine has been the case for many others, after several long conversations we began working on a paper together. To be more precise, we started work on a new version of an old paper that Richard had conceived of more than twenty years ago. While this seemed unusual to me, Richard assured me it was not unheard of – in fact, he had recently finished another paper that had been on an even longer hiatus. I think this ongoing engagement (and relentlessness) is unique. For those of us starting our academic careers, Richard provides an example of someone who is generous, endlessly creative, and has stayed connected to so many colleagues."

Jessica Stern

"Richard was my professor and served on my dissertation committee. I remember thinking about how much fun it was to be challenged by him; and how sad it was, when I finished my dissertation, that I might have to lay bare my assumptions without his help. His playful mind, fueled by a fierce curiosity, made him the best possible reader of a dissertation. He also taught me how to be a mentor. If I'm a good teacher today, if I have the hutzpah to display an interest in my students as people, if I've learned to question my own assumptions, it's because of him."

Anh Tran

"In my first semester as an MPA student at the Kennedy School, I made a huge mistake by deciding to take Richard's

"Analytic Methods." Awfully unprepared, I understood perhaps 20 to 40 percent of what Richard said. Growing up in an isolated country, I had no idea who was Howard Raiffa, what was game theory, or why baseball's rules were so complicated here. I was about to drop or fail the class. Probably noticing my constantly miserable face in the crowd, one day Richard told the class a story about how two Vietnamese students did superbly well in his class ten years earlier. Richard did not really link this example to any analytic method or maxim that he was teaching. I now suspect that he even made up the story. But it transformed my confidence that I could pass the course. When the grades were in, Richard emailed me saying he revised his recommendation letter for the doctoral program. This initial boost in self-confidence that Richard gave me has helped me to go a long way from where I was."

Alexander Wagner

"Whenever I visit Richard, it appears that I have his full attention – even though, objectively, I know that many other coauthors, friends, and colleagues receive equally intense attention. I am not able to "be like Richard" in terms of intellectual abilities. But I can at least aspire to "act like Richard" in terms of generosity with time and goodwill towards all."

Wendy Wyatt

"For the past thirty years, I have been privileged to observe the enduring impact Richard's wit and wisdom have had on many generations of students, colleagues, and friends. He has a unique gift for analytic thinking and decision making, combined with a kind and generous heart."

APPENDIX B – CONTRIBUTORS

Chris Avery is the Roy E. Larsen Professor of Public Policy at the Harvard Kennedy School, and teaches analytic courses in microeconomics and statistics. He studies rating and selection mechanisms, focusing on the college admissions system. His first book, *The Early Admissions Game*, coauthored with Andrew Fairbanks and Richard Zeckhauser, was published by Harvard University Press in March 2003. In his current research, he studies college application patterns and college enrollment choices for high school students. He completed a PhD in economic analysis at the Stanford Business School and holds prior degrees from Harvard and Cambridge universities.

Max H. Bazerman is the Jesse Isidor Straus Professor of Business Administration at the Harvard Business School. His research focuses on decision making, negotiation, and ethics. He is the author of eleven books and more than 200 research articles and chapters. His awards include an honorary doctorate from the University of London (London Business School); the Life Achievement Award from the Aspen Institute; and the Distinguished Scholar Award, the Organizational Behavior Division's Life Achievement Award from the Academy of Management.

Alan Berger is a Professor of Landscape Architecture and Urban Design at MIT, where he teaches courses open to the entire student body. He is founding director of MIT's P-REX lab, a research lab focused on environmental problems caused by urbanization, including the design, remediation, and reuse of

waste landscapes worldwide. All of his research, teaching, and practice emphasize the links between urbanization and the loss of natural resources and growth of waste, to help us better understand how to proceed with redesigning intelligent outcomes.

Syon Bhanot is an Assistant Professor of Economics at Swarthmore College, studying behavioral and public economics. He completed his BA at Princeton University in 2006, his MPP at Harvard Kennedy School in 2009, and his PhD in Public Policy at Harvard University in 2015. His areas of research interest include pro-social behavior, development, and personal finance decisions.

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Iris Bohnet, the Albert Pratt Professor of Business and Government, is the Academic Dean of Harvard Kennedy School. She is a behavioral economist, combining insights from economics and psychology to improve decision making in organizations and society, often with a gender or cross-cultural perspective. Her most recent research examines behavioral design to de-bias how we live, learn and work.

Jonathan Borck is an Adjunct Lecturer in Public Policy at Harvard Kennedy School. He is also a Vice President at Analysis Group, Inc., in Boston. He specializes in the application of economics and statistics in the areas of finance, antitrust economics, energy, and the environment.

Stephen Breyer is an American lawyer and jurist who has served as an associate justice of the Supreme Court of the United States since 1994. He was an Assistant Professor, Professor of Law, and Lecturer at Harvard Law School, 1967–1994, and a Professor at the Harvard University Kennedy School of Government, 1977–1980.

Albert Carnesale was Chancellor of UCLA from 1997 through 2006, and continues to teach and conduct research on national security policy. Prior to serving at UCLA, he was at Harvard for 23 years, serving as Lucius N. Littauer Professor of Public Policy, Dean of Harvard Kennedy School, and Provost of the University.

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Ingrid Gould Ellen is the Paulette Goddard Professor of Urban Policy and Planning at New York University and Furman Center Faculty Director. She is author of *Sharing America's Neighborhoods: The Prospects for Stable Racial Integration* (Harvard University Press, 2000), and has published numerous articles on housing policy, neighborhoods, and segregation.

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Jeffrey A. Friedman is an Assistant Professor of Government at Dartmouth College. His research focuses on the ways in which risk and uncertainty shape high-stakes decisions, particularly in the domain of national security.

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Victor R. Fuchs is the Henry J. Kaiser Jr. Professor Emeritus in the departments of Economics and Health Research and Policy at Stanford University. He is also a research associate of the National Bureau of Economic Research, a senior fellow at the Stanford Institute for Economic Policy Research and a fellow at Stanford's Freeman Spogli Institute for International Studies. He applies economic analysis to social problems of national concern, with special emphasis on health and medical care.

Jason Furman is Professor of the Practice of Economic Policy jointly at Harvard Kennedy School and in the Department of Economics at Harvard University. Furman was a top economic adviser to President Obama for eight years, including serving as the Chairman of the Council of Economic Advisers from August 2013 to January 2017, acting as both President Obama's chief economist and a member of the cabinet.

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Tony Gómez-Ibáñez is the Derek C. Bok Research Professor of Urban Planning and Public Policy at Harvard University, where he holds a joint appointment at the Graduate School of Design and the John F. Kennedy School of Government. He has taught courses in economics, infrastructure and transportation policy in both schools.

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John A. Haigh is Co-Director, Mossavar-Rahmani Center for Business and Government

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Alice Heath is a PhD student in Public Policy at the Harvard Kennedy School. She conducts research in labor and public economics, focusing on policy that impacts children and families. Before her PhD, Alice worked as a Mathematics teacher in the

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Jody Heymann is UCLA Distinguished Professor of Public Policy and Public Health. She is Founding Director of the WORLD Policy Analysis Center, the largest quantitative center analyzing social policy in 193 countries. An elected member of the National Academy of Sciences, Heymann served as Dean of the UCLA School of Public Health.

William Hogan is the Raymond Plank Research Professor of Global Energy Policy, and Research Director of the Harvard Electricity Policy Group (HEPG). Formerly a member of the faculty of Stanford University, where he founded the Energy Modeling Forum (EMF), he is a past president of the International Association for Energy Economics (IAEE).

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Howard Kunreuther is James G. Dinan Professor Emeritus of Decision Sciences and Public Policy, and Co-Director of the Wharton Risk Management and Decision Processes Center at the Wharton School, University of Pennsylvania. Howard has a long-standing interest in how society can better manage low-probability, high-consequence events related to technological and natural hazards.

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Elizabeth Linos is an Assistant Professor of Public Policy at UC Berkeley. She is a behavioral scientist and public management scholar. The majority of her research focuses on how to improve government by focusing on its people. Specifically, her studies consider how we can improve diversity in recruitment and selection, how to reduce burnout at work, and how different work environments affect performance and motivation in government. In her research on behavioral public administration, she also studies how to use low-cost nudges to reduce administrative burdens and to improve overall resident-state interactions.

Lee Hsien Loong is the Prime Minister of the Republic of Singapore. He graduated from the Master of Public Administration program at Harvard Kennedy School in 1980.

Glenn Loury is an academic economist and public intellectual whose work has focused mainly on the economics of social policy. Trained at MIT in the 1970s, he has taught at Harvard, Boston, and Northwestern universities, and at the University of Michigan. He is currently the Merton P. Stoltz Professor of the Social Sciences at Brown University.

Marijane Luistro Jonsson is a postdoctoral researcher at Stockholm School of Economics (SSE), where she teaches and conducts interdisciplinary research on the behavioral dimension of sustainability. Among her research foci are cooperation, nudges, and knowledge resistance. She is originally from the Philippines.

Tarek Masoud is a Professor at Harvard Kennedy School, where he researches political development in the Middle East and Muslim-majority countries. He holds an AB from Brown and a PhD from Yale, both in political science.

Barry Nalebuff is the Milton Steinbach Professor at Yale School of Management. A graduate of MIT, a Rhodes Scholar, and a Junior Fellow in the Harvard Society of Fellows, Nalebuff earned his doctorate at Oxford University. In addition to his academic work, Barry and his former student Seth Goldman cofounded Honest Tea.

Joachim Neipp was educated as an economist at the Department of Economics of the University at Heidelberg in Germany. He served as a Research Fellow at Harvard Kennedy School in 1984–1985. In 1987, he joined Bayer and currently serves as its Head of Financial Operations.

Joseph Newhouse completed his PhD in economics and then spent twenty years at RAND working in the economics of health care. He came to Harvard as the John D. MacArthur Professor of Health Policy and Management, with appointments at the Kennedy School, Medical School, and T.H. Chan School of Public Health.

Gary Orren is the V.O. Key, Jr., Professor of Politics and Leadership at Harvard University, where he has taught for the past 52 years. A leading expert on public opinion, politics, and persuasion, he has published six books. He graduated summa cum laude from Oberlin College and received his PhD from Harvard University.

Victor Paci practiced corporate and securities law as a partner in a large Boston law firm until 2005 when he joined ERI, which had been his client for the previous 24 years. At ERI, he participates in the sourcing, structuring, and negotiation of investments and in the management of the firm and its investment partnerships.

Edward A. (Ted) Parson is Dan and Rae Emmett Professor of Environmental Law at UCLA. Parson studies international environmental law and policy, and the impacts and governance of disruptive technologies. He holds degrees in physics from Toronto and in operations research from the University of British Columbia, and a PhD in Public Policy from Harvard. In former lives, he was a classical musician and an environmental activist.

Jayendu Patel leads OurIndia Investing, teaches at Indian School of Business, and consults. His work combines statistics, economics, and behavioral decisions. After earning his PhD from University of Chicago, he taught at Harvard University, Boston College, and Boston University. From 2001–2008, he was Chief Science Officer at Choicestream.

Harold Pollack is an urban public health researcher at the University of Chicago. His current research concerns improved services for individuals at the boundaries of the behavioral health and criminal justice systems. Past President of the Health Politics and Policy section of the American Political Science Association, he has published widely at the interface between poverty policy and public health. His journalism regularly appears in such outlets as the *Washington Post*, the *New York Times*, and other popular publications.

Taran Raghuram is a graduate student studying public policy at the Harvard Kennedy School. He is focused on issues of political polarization and national identity in the United States. He previously worked as a consultant for public school districts and is a Fellow with the Program in Education Policy and Governance at the Harvard Kennedy School. He received his BAs in Physics and Economics from Brown University.

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Chris Robert is a technologist, entrepreneur, economist, researcher, and lecturer. He founded Dobility, Inc., which produces SurveyCTO, an electronic data collection platform used

worldwide by leading researchers and evaluation professionals. He is involved in a long-term project to evaluate the impacts of microfinance in South India and develops online curriculum for a program to promote the use of evidence in policy-making (initially in Pakistan and India). He has taught statistics and policy analysis at Harvard Kennedy School.

Todd Rogers is a behavioral scientist and Professor of Public Policy at Harvard Kennedy School. His work applies behavioral science insights and methods to understand important social challenges and to develop interventions to mitigate them. He studies how to help families effectively support student success, and how to improve democracy.

Devjani Roy is Managing Director at Texas Tech University Health Sciences, and a former Postdoctoral Fellow at Harvard Kennedy School, where her research focused on the intersection of the behavioral sciences and the humanities.

William Samuelson is Professor of Finance and Economics at the Questrom School of Business at Boston University, His research interests include decision making, negotiation and dispute resolution, game theory, experimental economics, behavioral economics, and competitive bidding. His scholarly articles have appeared in the American Economic Review, Econometrica, Journal of Finance, Management Science, Operations Research, and Quarterly Journal of Economics. He has authored two books: Game Theory and Business Applications and Managerial Economics (9th Edition).

Frederick Schauer, the David and Mary Harrison Distinguished Professor of Law at the University of Virginia, previously served as the Fran Stanton Professor of the First Amendment at the Harvard Kennedy School and as Professor of Law at the University of Michigan. He writes about legal reasoning, constitutional law, freedom of speech and the press, the law and theory and policy of evidence, and the philosophy of law.

Benjamin Schneer is an Assistant Professor of Public Policy at Harvard Kennedy School, where he focuses on American politics. He received his PhD from the Department of Government at Harvard University.

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David Slusky is an Associate Professor of Economics at the University of Kansas. His research focuses on health care, children, infrastructure and environment, and insurance. He received a BS in Physics and International Studies from Yale University and an MA and PhD in Economics from Princeton University.

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