

By the Numbers

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“Lies, damn lies, and statistics” – the phrase, attributed to Benjamin Disraeli, is often interpreted to mean that statistics can be manipulated to prove anything. But in reality, statistics are never *proof*. Indeed, the term “statistics” is often used in several senses, none of which involve genuine proof. The British economist John Maynard Keynes observed that statistics “can be divided into two parts which are for many purposes better kept distinct.” The first part, Keynes wrote, is “purely *descriptive*. It devises numerical and diagrammatic methods by which certain salient characteristics of large groups of phenomena can be briefly described.” The second part is “*inductive*. It seeks to extend its description of certain characteristics of observed events to the corresponding characteristics of other events which have not been observed.”¹

In other words, if we had a small jar of marbles, some white and some black, we could count them all and state descriptively, let us say, that 34% are white. But if we had a barrel of such marbles, and it was impractical to count them all, we might grab a random

¹ John Maynard Keynes, *A Treatise on Probability* (London: MacMillan & Co., 1921), page 327.

handful, observe that 34% of the marbles in hand were white, and infer that 34% of all marbles in the barrel were white. Whether that inference produces an accurate result is what the science of statistics attempts to justify.

Speaking less abstractly, we might consider a study, published in 1833 by the Irish physician R. R. Madden, titled *The Infirmities of Genius*. Madden became interested in the effect of professions on life span. His study averaged the longevity of twenty famous writers and artists in each of several fields and found, for example, that the twenty famous writers on moral philosophy lived to an average age of 70.8 years, while the twenty famous novelists on average only made it to 62.8, a seemingly significant gap.² From those statistics we might conclude that, if you want to live longer, write philosophy, not fiction. But your conclusion probably would be incorrect for a variety of reasons having to do with both the quality of the data on which Madden relied and the difficulty of drawing reliable inferences about large populations from simple averages of small samples.

² Stephen Stigler, *Statistics on the Table: The History of Statistical Concepts and Methods* (Cambridge: Harvard University Press, 1999), pages 61-62.

To be sure, perhaps the most common function of statistics is to describe large populations based on smaller samples – for example, if you want to know what percent of the U.S. population is allergic to gluten, it would be impractical to ask everyone, but you can ask some properly selected smaller group and, from the result, extrapolate to the population as a whole.

Many have argued that the decennial United States census would be more accurate and far less expensive if done on a sampling basis rather than on an attempt to count everyone in the country. But in 1999, the Supreme Court ruled against the Department of Commerce’s plan to use statistical sampling for the 2000 census because Article I, Section 2 of the Constitution requires an “actual enumeration” of the population.³

Nevertheless, much social science absolutely depends on statistical sampling techniques. As Sir Ronald Fisher, one of the greatest statistical theorists of all time, put it in his pathbreaking 1925 book, *Statistical Methods for Research Workers*:

[I]n a real sense, statistics is the study of populations, or aggregates of individuals, rather than

³ *Department of Commerce v. United States House of Representatives*, 535 U.S. 316 (1999).

of individuals. Scientific theories which involve the properties of large aggregates of individuals, and not necessarily the properties of the individuals themselves, . . . are essentially statistical arguments, and are liable to misinterpretation as soon as the statistical nature of the argument is lost sight of. . . . Statistical methods are essential to social studies, and it is principally by the aid of such methods that these studies may be raised to the rank of sciences.⁴

To extrapolate with confidence the characteristics of large populations using data taken from only a sample of that population, it is necessary to develop notions of how large the sample size must be and how the sample is selected. We need some good reason to believe that the handful of marbles we took from the barrel was mixed the same way the barrel as a whole was mixed and that the mere handful was a large enough sample to give us confidence that its mixture fairly represents the barrel's mixture.

The science of statistics has developed many approaches to those problems and many tests of how reliable the result may be considered to be. One classic example derives from an actual event that has come to be known as "the lady tasting tea."

⁴ R.A. Fisher, *Statistical Methods for Research Workers* (New York: Hafner Publishing Co., 14th ed. 1973), pp. 1-2.

As you know, the English like to take their tea with milk. The statistician Fisher was at a Cambridge party in the 1920s when one guest, Muriel Bristol, claimed she could taste the difference between a cup of tea in which the tea had been poured first and then the milk and another in which the milk had been poured first and then the tea. The other guests were dubious. Assuming the proportions of tea and milk in the two cups were identical, what possible difference could there be once the two liquids were mixed? Fisher thought Bristol's claim could be tested by an experiment. He mixed eight cups, four with the tea poured first and four the opposite way. He lined up the cups randomly in a row and asked Bristol to divide the eight cups into two sets of four according to her judgment as to how the mixture had been prepared.⁵

With his experiment, Fisher introduced the concept of testing a “null hypothesis.” A null hypothesis presumes there is no connection between an observed effect and its alleged causes. In other words, to the extent Bristol correctly identified the tea-milk mixtures, the null hypothesis holds it was by chance or luck alone and not due to any

⁵ The story is told in *The Lady Tasting Tea*, by David Salsburg (New York: W.H. Freeman, 2001). Fisher's explanation of his experimental design is stated in his book *The Design of Experiments* (Edinburgh: Oliver & Boyd, 1935), ch. 2.

actual ability to taste the difference. Fisher's strategy was to test whether the null hypothesis – no ability to tell the difference – probably explained the result or whether the choices Bristol made could be ascribed to an actual cause: her ability to tell one kind of mixture from the other.

Of course, Bristol had a 50% chance of getting any cup correctly by sheer luck. So Fisher had to determine what number of correct answers would satisfy the partygoers that the result was based on Bristol's acute taste buds and not her good luck. He first observed that there are 70 possible ways to pick four cups from a row of eight: 1, 2, 3, 4; 1, 2, 3, 5; 1, 2, 3, 6; 1, 2, 3, 7; 1, 2, 3, 8; 2, 3, 4, 5; 2, 3, 4, 6; and so on. Only one of those 70 possibilities was the correct answer, however. In other words, by sheer luck Bristol could be expected to guess correctly once out of 70 tries, or 1.4% of the time. Fisher applied a conventional test, which was that results occurring 5% or less of the time are probably not due to chance – sometimes that's called the "95% confidence level." So because 1.4% is less than 5%, if Bristol correctly separated the eight cups into two groups of four, Fisher was willing to believe she was actually able to tell the difference – though of course the result still *could* have been pure

luck. As Fisher observed, the null hypothesis is never proven, but at some level of confidence we feel comfortable in rejecting it.

Now, what if Bristol had correctly guessed three cups out of four? That might suggest *some* ability to tell the difference. For Fisher, however, that would not suffice to persuade him to reject the null hypothesis – that is, the assumption that she had no ability to tell the difference. Though there is only one way in which four of eight cups could be identified correctly, there are 16 ways of identifying three of four correct cups from the 70 possibilities, or a chance of over 20%. That would leave too much room for guessing, and thus Fisher was not willing to rule out the likelihood that Bristol was just lucky based on correctly identifying three cups out of four.

Of course, all of that is simply algebra, which may satisfy some but not everyone. We often apply some component of subjective judgment to statistical data. For example, what if, instead of claiming extraordinary taste buds, Bristol had claimed an extraordinary sense of smell. Suppose she had claimed she could tell, by smell alone, whether a coin was facing heads up or heads down. Suppose Fisher had randomly laid out eight gold sovereigns, four heads and four tails, and covered them with a handkerchief. The odds would be

precisely the same as with the teacups. But I have little doubt that, even if Bristol had picked out the four heads-up coins correctly, most of us would be unwilling to believe she had any actual ability to tell the difference. Strongly, but perhaps wrongly, we simply do not believe the heads side of a coin smells differently from the tails. We would need much more evidence – certainly many more trials – before being persuaded that the null hypothesis was not likely.

* * *

I hadn't thought much about statistics until I got an e-mail a while back from an old friend in Japan, Toshi Kimada. I had met Toshi when he came to Chicago in the late 1970s as a graduate student in sociology. Instead of working on his dissertation, however, he had gotten caught up in the local blues scene when I was producing blues records for a small Chicago label. We had met one night at a North Side tavern called the Wise Fool's Pub, where the Otis Rush band was performing. Toshi had written several articles for a Japanese blues magazine and asked if I could introduce him to some musicians whom he could interview.

Over the next several months, I ran into Toshi frequently at one blues club or another, and I found conversation with him to be

unusually stimulating. He tried to understand the Chicago blues through the lens of such sociology classics as *Black Metropolis*, published in 1945 by St. Clair Drake and Horace Cayton, Jr., and *The Negro Family in Chicago*, published in 1939 by E. Franklin Frazier. He later told me that he had proposed a dissertation on Chicago blues to his faculty at Kanazawa University in Japan but that the topic had been rejected.

Our paths diverged over the years. Toshi moved back to Japan and became a professor with a specialty in quantitative analysis, and I became a lawyer. Then one day Toshi sent me an e-mail saying that his son Torii was in Chicago studying sociology and asking if I might be willing to meet with him about a problem he was having. He didn't say what the problem was, but I thought the odds were it was a traffic infraction or perhaps some minor drug issue.

We arranged a date and, at the appointed time, Torii Kimada appeared at my office. I held out my hand, but he nodded in a short bow and said "Thank you for seeing me, Steve-san. My father sends his deepest greetings." His English was excellent, but he had Toshi's nervous habit of accelerating his rate of speech toward the ends of his sentences.

I asked about his father and whether he shared his father's interest in the blues. "My father played the blues all the time at our house," he said. "It was like no other music existed. So you can imagine that I grew a bit sick of it. He used to say that all modern music comes from the blues, but when I asked him for proof of that, he would say I just had to believe him. So, no. My favorite band is Ed Sheeran. Everybody loves him."

"Call me an outlier then," I said. I don't know his music at all. But your father said you need some advice. How can I help?"

Torii described his problem and said he could not afford to pay me. I told him his problem was not well suited to a solution through the legal system. I mentioned that I am a member of a club in which members present papers on a wide variety of topics, and his problem sounded like something that might be suited to that treatment. So I said I was willing to help him *pro bono* if, in the spirit of scientific discourse, he would let me use some details of his story in a Literary Club paper. He readily agreed.

This is what he told me.

Like most graduate students, Torii spent much of his time trying to find a dissertation topic that would make a real mark in his

field. Ever since Mitch Duneier, a PhD candidate in sociology at the University of Chicago, had published his thesis as the surprising best-seller *Slim's Table* in 1992, sociology departments in Chicago had been awaiting the next blockbuster. Though most PhD dissertations and academic sociological works are aimed at a narrow audience and never achieve anything like popular success, *Slim's Table*, which told the story of a group of men who regularly met at the Valois "See Your Food" cafeteria in Hyde Park, was not a one-off phenomenon.

Indeed, the University of Chicago's Department of Sociology was, during the first half of the 20th century, a world leader in the publication of "life histories," largely under the direction of Ernest W. Burgess, who taught sociology at the University from 1916 to 1952. Burgess viewed the intensive study of a single individual's life as applying a "microscope . . . [enabling the researcher] to see in the large and in the detail the total interplay of mental processes and social relationships."⁶ In 1930, Burgess's student, Clifford R. Shaw, published perhaps the best-known of those life histories, *The Jack-*

⁶ Ernest W. Burgess, Preface to Clifford R. Shaw, *The Jack-Roller: A Delinquent Boy's Own Story* (Chicago: University of Chicago Press, 1930).

Roller: A Delinquent Boy's Own Story, which was the product of several years of interviews with a teen-aged petty criminal in Chicago named Stanley. Shaw later took the lessons he learned and founded the Chicago Area Project, a juvenile-delinquency prevention agency based on the principle that indigenous community leaders, not academics or the police, have the best ideas on how to keep their young people out of trouble.

Though it was influential in its field, *The Jack-Roller* was hardly a best-seller. But Oscar Lefkowitz (1914-1970), a professor of sociology at the University of Illinois, wrote, under his professional name, Oscar Lewis, several best-selling books, including *The Children of Sanchez: Autobiography of a Mexican Family* (1961) and *La Vida: A Puerto Rican Family in the Culture of Poverty* (1966). *La Vida*, largely the story of a former prostitute from San Juan and told in what Lewis presented as her own words, won a National Book Award in 1967. Its unflinching and vivid descriptions of her sexual practices inspired a generation of middle-class undergraduates to whom the book was regularly assigned in Sociology 101. I remember seeing my Aunt Shirley reading it at the beach one summer. She had

placed the book inside a leather cover – whether to protect it from the sand or to keep her reading matter private, I don't know.

Lewis' books were not quantitative and presented little in the way of statistics. They were culled from hours of interviews with a few individuals, from which the interviewer's questions were removed, resulting in a first-person narrative with a novelistic structure. Rather than approach his subject through a normalization of wide data sampling, Lewis presented several individuals' stories and implied that they functioned as archetypes representing an entire class. Compelling as those stories were, however, we are left largely to Lewis' say-so that his small sample fairly represented truths about a larger population.

One lively version of the debate between pure statistical analysis and subjective storytelling can be found in Michael Lewis' 2003 bestseller, *Moneyball*. In explaining how the 2002 Oakland Athletics built a winning team while having the lowest salary budget in the major leagues, the book contrasts the subjective talent-judging abilities of traditional baseball scouts with player selection by Ivy-League-educated statisticians who had never played even an inning of the game.

In Lewis' telling, the scouts relied on such subjective factors as a player's physical appearance and whether he had a "good attitude," together with the seemingly objective factor of whether he had a good batting average. The statisticians ignored the subjective criteria and the batting averages, which in their view, led to overpricing a player's worth. The batting average measures hits per at-bat, but it ignores walks and being hit by the pitch, which both result in getting on base but are not counted as at-bats. The statisticians focused on the on-base percentage, which counts walks and hit batters as well as hits. Thus, a batter who appears at the plate three times, with one walk, one strikeout, and one hit, has a .500 batting average and gets on base twice. A player who gets two walks and one strikeout has a .000 batting average yet also gets on base twice. Both have equal value to the team, because the only way to score runs is to get on base. But the scouts would have picked the .500 hitter, who would command a high salary, while the statisticians picked the .000 hitter, whom they could acquire for very little.

Of course, once the other teams caught on to the statistical system, the Athletics' advantage largely disappeared. But the lesson was that statistics only matter if you pick the right statistics.

Though *Moneyball* told a compelling story of how an underdog can use statistical sampling to great advantage (and was made into a movie starring Brad Pitt), it's rare that a more purely theoretical work captures wide attention, and then usually because it promotes great controversy. For example, *The Bell Curve*, published in 1994 by sociologists Richard Herrnstein and Charles Alan Murray, created a firestorm when it argued that intelligence, as measured by standard IQ tests, is the primary determinant of social success and that the average intelligence level in America is declining because those with lower IQs tend to have more children. Similarly, *The Tube and the Pipeline*, published in 1997 by sociologist Fairfax Jenkins and statistician Rainer Clohessy, became a best-seller by presenting evidence showing that children who watched a lot of television were more likely to succeed in business and the professions than those who spent more time reading books.

The evidence on which both studies were based has now largely been discredited. But a logician might say that, even though the particular evidence offered to prove a theory is shown to be faulty, the theory still might be true. John Maynard Keynes, in his 1921 book, *A Treatise on Probability* (which was based on *his* doctoral

dissertation at Cambridge), made a similar point: “All propositions are true or false,” he wrote, “but the knowledge we have of them depends on our circumstances.”⁷ Or, as a lawyer might say, evidence is not the same thing as truth.

* * *

Standing at the corner of State and Madison one day, while waiting to cross the street, Torii Kimada watched as three cars went through the light after it had turned red. They had not simply started while the light was yellow in the hope of exiting the intersection before the light turned red; rather, they had not even entered the intersection until after the red light had appeared, potentially endangering the lives of any pedestrian or driver who relied on the perpendicular green light as permission to cross. Torii asked himself why someone would go through a red light. He had noticed that, of the three cars, one was Mercedes, one a Lexus, and one a Chevrolet SUV.

Given his sociological training, Torii quickly developed several hypotheses to explain the phenomenon, such as:

⁷ Keynes, *op. cit.*, page 3.

- (1) People in big, heavy cars are less likely to stop because they assume that, in any crash, they will come out ahead.
- (2) People who drive expensive cars are less likely to stop because they are more arrogant.
- (3) Drivers of commercial vehicles are less likely to stop because they don't own the vehicles.
- (4) Finally, there was a null hypothesis: every person who runs a red light does so for different reasons, and no consistent connections can be drawn from cause to effect.

Torii believed that cars running red lights was a significant social problem. Over the past 50 years or so, the automobile industry has done a superb job of making the inside of a car safer for its occupants in case of a crash. Seat belts, airbags, reinforced bracing, crumple zones, and sonar detection of approaching vehicles have saved thousands of lives from what, fifty years ago, would have been certain death.

The industry has made no similar advances in making vehicles less dangerous to pedestrians and bicyclists. A person hit by a car today is as likely to die as one hit years ago by a Hupmobile, DeSoto, or Nash Rambler. Indeed, as the Governors Highway Safety Association has pointed out, the increasing number of SUVs on the

road is bad news for pedestrians; SUVs are bigger, heavier, and therefore deadlier than other vehicles in pedestrian collisions.⁸

Statistics compiled by the Illinois Department of Transportation show that, in 2015 (the most recent reporting period available), there were 2,855 collisions between a car and pedestrians, or nearly eight each day. Of those, 40 were fatal to the pedestrian and 2,673 – nearly all the rest – resulted in serious personal injury. The vast majority of the collisions occurred in broad daylight, where limited visibility was not a factor.⁹ From 2004 through 2015, 487 Chicago pedestrians were killed when struck by an automobile, an average of more than 40 per year.¹⁰

One program some cities have implemented to reduce accidents from cars going through red lights is automated camera ticketing. Cameras installed at high-risk intersections automatically

⁸ Sea Stachura, “Why Pedestrian Deaths are at a 30-Year High,” NPR *Morning Edition*, March 28, 2019, available at www.npr.org/2019/03/28/706481382/why-pedestrian-deaths-are-at-a-30-year-high

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http://chicagocrashes.s3.amazonaws.com/crashdata/chicago_2015/Chicago%202015%20City%20Summary.pdf

¹⁰ <https://apps.dot.illinois.gov/epln/desenv/crash/City%20Summaries/>

photograph each car's license plate. Owners of cars revealed to have run the red light are sent tickets by mail.

While camera enforcement at first impression seems a simple and objective method to crack down on red-light violations, it has proved extraordinarily controversial. To be sure, the cameras have generated substantial revenue from the tickets issued. But the statistics on whether they actually have improved traffic safety are unclear. A 2005 article in the *Washington Post* reported that, although cameras in the District of Columbia had generated “more than 500,000 violations and \$32 million in fines” over the prior six years, data reviewed by three independent traffic experts revealed that the cameras “do not appear to be making any difference in preventing injuries or collisions.” Indeed, the *Post*'s analysis showed that dangerous collisions at intersections with the cameras had actually *increased*.¹¹ In response, the Insurance Institute for Highway Safety sent a letter to the *Post* arguing that the article's statistics were flawed because the authors had relied on misleading

¹¹ Del Quintin Weber & Derek Willis, “D.C. Red-Light Cameras Fail to Reduce Accidents,” *Washington Post*, October 4, 2005, page A1 (available at www.motorists.org/issues/red-light-cameras/d-c-red-light-cameras-fail-to-reduce-accidents/)

data.¹² Still, the National Motorists' Association's web site argues that:

Despite the claims of companies that sell ticket cameras and provide related services, there is no independent verification that photo enforcement devices improve highway safety, reduce overall accidents, or improve traffic flow. Believing the claims of companies that sell photo enforcement equipment or municipalities that use this equipment is like believing any commercial produced by a company that is trying to sell you something.¹³

A doctoral dissertation by Anthoni F. Llau Jr. at Florida International University showed that, although placing red-light cameras at 40 intersections in the Miami-Dade metropolitan area decreased right-angle collisions somewhat, they increased rear-end collisions significantly.¹⁴

The usefulness of red-light cameras became so controversial in Mississippi that the legislature banned them in 2009.¹⁵

¹² Available at www.iihs.org/iihs/sr/statusreport/article/40/9/4

¹³ Available at www.motorists.org/issues/red-light-cameras/objections-2/

¹⁴ Anthoni F. Llau Jr, "The Impact of Red Light Cameras on Injury Crashes within Miami-Dade County, Florida," FIU Electronic Theses and Dissertations 2240 (2015), available at www.thenewspaper.com/rlc/docs/2019/fl-fiudiss.pdf

¹⁵ Joel Hruska, "Mississippi Makes Red-Light Cameras illegal," *Ars Technica*, March 24, 2009, available at <https://arstechnica.com/gadgets/2009/03/mississippi-bans-red-light-cameras-chicago-pay-attention/>

The City of Chicago began a red-light camera program in 2003 and currently has over 300 cameras installed at more than 150 intersections. Though, as elsewhere, many community groups perceived the program's goal as strictly to generate revenue for the City's starved coffers, a study performed during 2015-2016 by the Northwestern University Transportation Center showed that, contrary to other analyses, the presence of cameras at an intersection reduced right-angle crashes by 19%, rear-end crashes by 14%, and overall crashes by 10%.¹⁶

The Northwestern study did not attempt to explain why the presence of cameras tended to reduce crashes and, as with the notion that a person could smell the difference between the heads and tails sides of a coin, raw statistical showings without at least some theory of causation seem more like parlor tricks. One might assume that drivers who are aware that they are being photographed are less likely to transgress, just as most of us will slow down on the highway

¹⁶ Hani S. Mahmassani *et al.*, *Chicago Red Light Camera Enforcement: Best Practices & Program Road Map* (March 17, 2017), page 1-11, available at www.transportation.northwestern.edu/research/featured-reports/chicago-red-light-camera-report.html

when we see a police car or a speed trap. But by and large, the cameras are not visible, and many drivers are not even aware of them. Nor did the study attempt to find out why some drivers transgressed even though they knew they were being filmed. So the cameras' presence probably had no influence on any driver's decision to transgress. Without any theory of causation, the statistics themselves remain inconclusive.

Indeed, the absence of any theory of causation has been a stumbling block for statisticians since the early days of sophisticated statistical science. The British statistician William Stanley Jevons, who lived from 1835-1882, was a pioneer in applying statistical analysis to social data, linking mathematical statistics to sociology and economics. In 1863, he showed, through meticulous statistical correlations, that the prices of key commodities rose as more gold discoveries were made, because as more gold entered the system, its value as a medium of exchange fell.¹⁷ While the connection seems plain enough today, it was striking in its time. But alas, Jevons's success in correlating gold discoveries with rising prices led him to

¹⁷ Stigler, *Statistics on the Table*, pages 69-70.

attempt other correlations, with less successful results. For example, he believed he had shown a strong statistical correlation between the appearance of sunspots and the price of wheat. His analysis was flawed for several reasons and was roundly derided by the statistical community, which responded with a parody purporting to show a statistical link between sunspot activity and whether Oxford or Cambridge would win their annual Thames Boat Race.¹⁸

* * *

Sensing a possible dissertation topic of great social interest, Torii decided to collect some preliminary data to test his hypotheses. Initially, he attempted to obtain footage from the Chicago camera system to see if it would reveal data on what sorts of cars were crossing on red. But the City was unwilling to make the film available, based on misguided privacy concerns. Torii then decided to model the same system on a smaller scale: he set up two small video cameras at the corner of Adams and Dearborn in the Loop – a busy intersection of two one-way streets, which would make observation simpler. He focused his attention on Dearborn Street,

¹⁸ Stigler, *Statistics on the Table*, page 78.

where all the traffic headed north. One camera was trained on the traffic light, the other on the street at the crosswalk. He turned the cameras on at 6:00 am and sat nearby on a small camp stool with a notebook to write down any unusual occurrences. He recorded every day until 7:00 pm for a week.

Several people approached him while he sat by his cameras to ask what he was doing. Most were concerned that he was recording them as they walked across the street. One called over a police officer and said Torii was violating his privacy rights. The officer asked Torii for identification and remarked abruptly, as though it were relevant, that Torii was “a foreigner.” Torii had little experience with American police practices or constitutional rights and was unsure of how to respond. “I am a graduate student,” he said, thinking that might explain both his presence in America and his presence on the street. “That’s great,” the officer replied, “but why are you filming these people? You’re going to cause a riot.”

Torii explained that he was not filming people or pedestrians at all. “I’m studying the cars,” he said. “I’m trying to figure out why they go through red lights.” The officer frowned deeply, convincing Torii that he had given a bad response. “I’ve always wondered that

myself,” the officer said. “Let me know when you find the answer.” He then waved away the group that had gathered around them and told them they had better things to do than to bother this young researcher.

Once he had finished recording, Torii painstakingly reviewed the 91 hours of data, a process that took nearly a month given his other academic responsibilities. He found the following:

Number of vehicles crossing the intersection:	487,396
Number of vehicles transgressing:	6,243
Percentage of vehicles transgressing:	1.3%

Torii was surprised that the percentage was so low, but still, over 6,000 transgressing vehicles a week at only one intersection seemed like a substantial number.

Next, Torii developed a typology for classifying the vehicles he had recorded. He divided them into six categories: trucks, busses, taxis, SUVs, luxury cars, and ordinary cars. While the dividing line between luxury and ordinary cars is not a sharp boundary, for convenience at this preliminary stage, Torii put all Mercedeses, BMWs, Porsches, Lexuses, Infinities, Accuras, Cadillacs, and Lincolns in the luxury category. Of course, he would have put

Lamborghinis, Aston-Martins, Ferraris, and similar cars in the luxury group as well, but there were none.

Once he had devised his typology, Torii set about calculating how many of each type were among the 6,243 transgressors. His data showed the following:

SUVs:	624	10%
Trucks:	749	12%
Taxis:	874	14%
Busses:	999	16%
Luxury cars:	1,374	22%
Ordinary cars:	1,623	26%

Therefore, the data seemed to suggest that ordinary cars transgressed more than any other category.

But that statistic was misleading, because of course there were far more ordinary cars than any others crossing the intersection. By Torii's count, of the 487,396 vehicles crossing the intersection during his study period, 253,446, or 52%, were ordinary cars, while only 38,992, or 8%, were luxury cars. Thus, only 0.6% of the ordinary cars transgressed, while 3.5% of the luxury cars did so, nearly six times as many.

That result was a revelation in Torii's mind, seeming to refute the null hypothesis that luxury car status has no impact on red-light

transgression. Torii decided to write up his findings and submit them to *The Journal of Social Investigation*, a student-run publication in which doctoral candidates could present findings that the discipline would generally regard as preliminary. Because the journal was student-run and not peer-reviewed, Torii did not think it was necessary to show his faculty advisor a draft of the paper before he submitted it.

The paper, “A Preliminary Investigation of Intersectional Transgression,” by T. Kimada,¹⁹ created no reaction when published. “I dropped a pebble into the pond, and it created no ripples,” Torii told me in a Zen sort of way. But he was not discouraged. He recognized that his data-collection process had significant limitations and that his sample size was small. He understood that a thorough study might need to address many factors he had ignored, such as location, time of day, time of year, weather, speed limit, density of the traffic, length of the red and green lights, and so on. Further, he realized that his working assumption – that the drivers of luxury cars all run to a single type – was also very crude. A better study should

¹⁹ Available at www.jsi.org/041517/TK656333

account for the driver's sex, age, and actual income, among other factors that might be relevant to a propensity for transgression.

Torii therefore proceeded to write up a proposal for a more extensive and nuanced study, hoping it might prove an acceptable dissertation topic. He told me he spent several months surveying the literature on road accidents, survey methods, statistical methodology, and the propensity of wealthy people to break the law. When complete, the proposal ran to some 250 pages, including a lengthy bibliography.

* * *

It turned out that, as far as Torii knew, only three people – of whom only two had actually read the paper – were interested in his article.

Arnold Baker, a deputy commissioner at the Illinois Department of Transportation, sent Torii a letter (not on official stationery) asking whether there were more data and whether Torii planned to do further research. Baker said he thought there might be significant social policy ramifications if Torii's findings proved sufficiently robust and that the Department might consider a small grant to facilitate the work.

Peter Boghossian, a professor at Portland State University, sent an e-mail stating he found the paper to be – and he actually used the word – “brilliant.” He said that, if Torii wanted to expand the paper and its conclusions he would be happy to assist in finding an academic journal to publish it.

The third person – the one who had not actually read the paper – was Torii’s dean. The dean called him to his office shortly after Torii had completed his 250-page proposal but before he had submitted it. The conversation was brief. As Torii described it to me, the interchange went something like this:

The dean: “I hear you’ve published a paper suggesting that rich people break the traffic laws more frequently than others.”

Torii: “Well, sir, all I’ve done so far is collect some preliminary –”

The dean: “Yes, that’s it. Preliminary. *Very* preliminary, so I’ve been told. If I were you, I would tread very carefully in this area. The school depends on wealthy donors to survive. It would not go well to suggest without substantial and reliable data that they are a suspect class.”

Torii: “Sir, are you saying that I should not – ”

The dean: “Mr. Kimada, I’m not telling you what to do or not do. I’m just telling you I’m concerned, and I expect you to consider my concern seriously. Thank you for coming in.”

Needless to say, Torii left the dean’s office confused and more than a little worried. Two people, a policymaker and an academic, had given him reason to believe his work had merit and should be pursued. But the dean, on whom Torii’s future most directly depended, seemed to have doubts.

* * *

That was when Torii came to see me. “I understand the dean’s concern,” he said, “but I really think I am on to something, Steve-san.”

Torii explained that, in the early 20th century, the “Chicago School” of sociology focused attention on ecological factors as causes of criminal and other pathological behavior. Poor housing stock, joblessness, inadequate healthcare, and related phenomena, not psychosis or psychopathology, were the principal drivers of societal disintegration. For example, Clifford Shaw’s *The Jack-Roller* drew significant connections between the criminal behavior of the titular

small-time hood and the impoverished south-side Chicago neighborhood forces that shaped his behavior.²⁰

“My data show that there might be an effect going in the other direction,” Torii said. What if wealth, luxury, and privilege promote certain types of antisocial or illegal behavior? There have been so many studies of criminal behavior among the so-called “lower classes,” but apart from the occasional sensational murder case like Leopold and Loeb in Chicago, the Menendez brothers in Beverly Hills, or Akira Nakamura in Kyoto, the antisocial or criminal behavior of the very rich has received little attention and even less academic study.”

I didn’t find that surprising and told him so.

“I’m not alone in this, you know,” Torii said. “There is a psychologist at Berkeley named Paul Piff who has studied moral attitudes among the wealthy. His research shows that wealthy individuals tend, on the whole, to be more likely to lie in a negotiation than lower-class individuals, more likely to cheat in competitions,

²⁰ For a discussion, see Martin Bulmer, *The Chicago School of Sociology: Institutionalization, Diversity, and the Rise of Sociological Research* (Chicago: University of Chicago Press, 1984), page 89 ff.

and – get this – more likely to break the law while driving.²¹ His later paper showed that upper-class individuals were more likely than others to exhibit narcissistic behavior, like frequently looking at themselves in a mirror, and to show a greater sense of entitlement.²² But all that is *psychology*.” Torii nearly spat when he said the word; his disdain was evident. “You solve psychological problems by sending people to a therapist. But there aren’t enough therapists to solve *social* problems like reckless driving. We solve a social problem by making laws or policies based on what applies to *most* people, not on what applies to every individual.”

“If there *is* a problem,” I said. “You haven’t proved that yet.”

“Yes, yes. That’s very fair. Very wise counsel, *sensei*.” Torii took a deep breath. “But as a thought experiment, Steve-san, let us say I have collected data showing to a high degree of statistical probability that rich people are more likely than others to run red lights. I mean

²¹ Paul K. Piff, Daniel M. Stancato, Stéphane Côté, Rodolfo Mendoza-Denton & Dacher Keltner, “Higher Social Class Predicts Increased Unethical Behavior,” *Proceedings of the National Academy of Sciences*, March 13, 2012, available at www.pnas.org/content/109/11/4086

²² Paul K. Piff, “Wealth and the Inflated Self: Class, Entitlement, and Narcissism,” *Personality and Social Psychology Bulletin*, August 20, 2013, available at <https://journals.sagepub.com/doi/10.1177/0146167213501699>

a degree of probability that would have satisfied Professor Fisher. Then what? Should we require rich people to take more drivers' education than others before they can get a license? Or should we have a law basing traffic fines on the wealth of the driver? Or should we issue wealthy drivers special license plates and prohibit them from certain high-volume traffic areas at certain times? Or – ”

He stopped and smiled. I wasn't sure whether he had run out of ideas or was about to say something so outrageous that he was worried he might offend me.

“Seems to me,” I said, “you need to collect and analyze the facts before you can start thinking about what needs to be done — if anything.”

“I know you think that sounds reasonable, Steve-san,” Torii replied. “But if I do all this work and no one has the vision or the courage to do anything with it, what have I achieved? We know, for example, that SUVs are more deadly to pedestrians than passenger cars. But no one has suggested we ban SUVs. And I imagine that, if such a suggestion were made, no government would have the courage to implement it. People like their SUVs too much.

“Remember the Cook County soda tax? A case in point. Taxes on things that are harmful in excess, but not too harmful to ban outright, have long been considered good social policy as a way of limiting consumption. Alcohol. Cigarettes. Well, sodas loaded with sugar and high-fructose corn syrup are really in the same category. Statistics show that high levels of consumption are strongly associated with liver and heart disease. But the tax proved so unpopular that the government lost its nerve and repealed it, even though it was actually a good idea.”

“In America,” I said, “it seems we take the attitude that if I want to make myself sick I should have the right to do it without government interference.”

“You value individual freedom in a way that my country does not,” Torii said. “Or maybe I should say we are more conscious of the social costs that some types of individual freedom can impose. A man who makes himself sick harms not only himself but many others. He can even put other lives in danger. What if he has a sugar-induced heart attack from drinking too much soda while driving at 70 miles an hour on the interstate? A lot of people could die in the crash.”

“Statistically speaking, that’s probably rather rare,” I said.

Torii seemed a bit agitated. “That’s the thing about the relationship between statistics and social policy. We should seek to prevent not only relatively minor harms that occur frequently, but also very great harms that are rather rarer.”

I told him I saw the logic of his argument, but it didn’t really address the problem he was facing. “It seems to me that you’re too concerned with what others will do – or not do – with your research. What happened to basic science? You know, my father was an academic biochemist, and if you asked him what his research was about, he would say something like, ‘I’m trying to find out how cells work.’ And if you asked, ‘Will that help cure cancer?’ he’d say, ‘How do I know?’ If your research shows that rich people run more red lights than others, you’ve contributed to our fund of knowledge. Isn’t that enough?”

Torii didn’t look persuaded. He wanted to make a splash, address a societal issue of great concern. He wanted to *matter*.

* * *

The next time Torii came to see me, he told me about a conversation with Professor Boghossian of Portland State, the one

who had offered to help him find an outlet for his work. Boghossian pointed out what he considered to be a key flaw in the analysis. Torii had focused on the type of car, not the type of person driving it. If you took the Mercedes away from driver X and made him or her drive a Toyota, would the rate of transgression change? Does sitting behind the wheel of an expensive car in itself create a sense of entitlement that leans to transgression? Or does the entitlement come from the wealth itself? Torii thought the type of car was a sufficient proxy for the type of person, since he believed that most expensive cars were driven by wealthy people, but Boghossian was not persuaded. “You need to find out more about the drivers,” he said. “Interview them. Find out who they are. Find out what makes them want to transgress, then tell their stories. It could be another best-seller.”

“I’ve made a great discovery, Steve-san,” Torii told me excitedly. “But I have an interesting problem.”

“Should I take some notes?” I asked, reaching for a legal pad.

“Actually, yes,” he said. Let me tell you.” His voice accelerated as he spoke.

“So I learned that a psychologist at the University of Illinois has established a support group for repeat traffic offenders. The court offers referral to this group in exchange for some reduction in the penalty. I suppose it’s group therapy or some kind of twelve-step program. At these sessions, the members are encouraged to discuss what motivated them to transgress and what might motivate them to stop. I really doubt it does much good, but the court must think it does.

“I thought it would be very interesting to sit in on a few of these meetings to learn more about the kind of people who run red lights or violate other traffic laws. But when I asked this psychologist if that would be OK, he told me the group was confidential and not a subject for outside academic study.

“So then I had an idea: what if I committed several traffic violations and got referred to this group as a recidivist? But I thought it would be wise to come to you first to establish beforehand that my motivation in breaking the law was purely scientific. I think it would be good if you could make a note of that.”

I must confess I was rather taken aback. I am aware of no “scientific purpose” defense to breaking the law. More importantly,

even as a group member, he probably could not use anything he learned here. I had recently read about a university professor who had tricked several scholarly journal editors into publishing fake papers on bizarre topics just to see how far removed the academic world had departed from rigorous scholarly investigation. Perhaps the most infamous of his fake papers was a purported analysis of discrimination against overweight body builders at YMCA gyms, published in *The Journal of Fat Studies*. But instead of laughing at the joke or confessing to their own credulity, the hoodwinked scholars had leveled against the author the fairly serious charge of violating federal laws regulating experimentation on human subjects without their consent.²³

Torii's project sounded like it might have similar implications if he used the group members' stories under false pretenses. It might even be some sort of crime. I was concerned that Torii's student visa might be revoked and told him so.

²³ See Katherine Mangan, "Proceedings Start against 'Sokal Squared' Hoax Professor," *Chronicle of Higher Education*, Jan. 7, 2019, available at www.chronicle.com/article/Proceedings-Start-Against/245431

“I am grateful for your concern,” Steve-san, he said. “I should have given more thought to the implications. But I am convinced that statistics alone will not persuade my advisor and dean or make an impression on the public. This needs to be more like Oscar Lewis and Mitch Duneier and less like Ronald Fisher.”

That triggered a long-simmering thought. “Speaking of Ronald Fisher, what ever happened with the lady who claimed she could tell whether the milk or the tea was poured first? What did his experiment prove?”

“Well, his book does not provide the answer, Torii said. “It just describes the experiment. But another professor who attended the party later wrote that the lady correctly identified all the cups.²⁴ So I guess according to Fisher, she *could* tell the difference.”

“It still seems rather incredible to me,” I said.

Torii smiled. “I wish someone had interviewed her.”

* * *

Several months went by, during which I heard no more from Torii. Then one day late last year I got an e-mail from Toshi Kimada,

²⁴ Salsburg, *The Lady Tasting Tea*, page 8.

his father. He attached what he said was a translation of a paper he had written for *New Music Magazine* presenting the results of a preliminary study comparing the frequency of various words used in blues songs by artists from the Mississippi Delta and proving by statistics that Muddy Waters was Robert Johnson's grandson. He thanked me for the time I had spent giving Torii advice. Torii was back in Japan, he said. There had been an unfortunate circumstance. His visa had been revoked.