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Becoming a JEDI statistician

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Abstract

JEDI stands for justice, equity, diversity and inclusion. JEDI is a global movement, with networks connecting academic, business and grass roots organizations. A definition of 'JEDI statistics' and 'impermissible inequality' is proposed and illustrated with stories from government work, university teaching and academic research regarding race, ethics and social justice in statistics. I recently had the pleasure of discussing these ideas on a panel with Wendy Martinez, Safiya Umoja Noble, Donna LaLonde and participants in a plenary session of SDSS 2021, 'Equitable and Inclusive Data and Technology'. I thank them for their comments, and Wendy Martinez, notably.[1] There are in front of us unlimited possibilities for good by exploring the Venn diagram-overlaps of JEDI philosophy and statistics, JEDI and economic statistics, JEDI and department culture; JEDI medicine, JEDI coding, JEDI wealth and ownership, JEDI history and the historians of statistics, and so forth, striding towards our future for an antiracist and inclusive statistics and society.[2]

KEYWORDS
antiracism, capabilities, double marginalization, eugenics, impartial spectator, impermissible inequality, maximin, race, statistical significance, *Ubuntu*

1 | JEDI AND ACRONYMS

I am an economic statistician and historian who has published haiku in *Poetry* magazine; needless to say, I admire the moon, equations with π, and a decent acronym.[3] Years ago, I wrote a PhD thesis on PRWORA—the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. In the thesis, I made an econometric investigation of that controversial welfare reform in the United States, and I put the new evidence into historical and political economic perspective (Ziliak, 1997, 2004; Ziliak & Hannon, 2006). Statistically speaking, I estimated the rise and fall of hazard functions, Weibull distributions, and comparative economic interpretations of 'exit' parameters using late 19th century caseload data I collected in the archives, to shine a light on the present case.

I came by it honestly. My first professional job after college but before the PhD was welfare caseworker, Marion County Department of Public Welfare, Indianapolis, Indiana. Applicants for food stamps, Aid to Families with Dependent Children (AFDC), Medicaid, and child support were visited by a caseworker at their place of residence (including women's shelters), in those days, and I, as the caseworker, lost shoe leather. It was easy for me to relate with clients: I was receiving monthly food stamps for my family of three simultaneous with my work (that's how low caseworker pay was, and still is, in some places).

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[1] https://ww2.amstat.org/meetings/sdss/2021/onlineprogram/AbstractDetails.cfm?AbstractID=309823

[2] To explain a little more, in 1996, I earned a PhD Certificate in the Rhetoric of the Human Sciences at the same time I completed the PhD in Economics. I teach Rhetoric and Moral Philosophy, too, and since 2007, I have taught annually a course on 'Theories of Justice in Economics and Philosophy' to PhD, MA and BA students at Roosevelt University and in short courses at several universities in Europe.

[3] Ziliak, S.T. 'Haiku Economics: Money, Metaphor, and the Invisible Hand' (*Poetry*, Jan. 2011) reprinted, pp. 61–63, *Who Reads Poetry: 50 Views from Poetry Magazine* (Poetry Foundation and University of Chicago Press, 2017), eds. Fred Sasaki and Don Share.

I hated that acronym, PRWORA, and what it stood for: the unequal punitive and demeaning regulations imposed upon low-income, less abled citizens and immigrants—arbitrary work rules, mandatory drug testing; paternalistic and disingenuous bourgeois virtue talk about 'out of wedlock child birth', 'self-reliance', and 'personal responsibility'; racist, classist, sexist and nativist language in the fashion of President Reagan's 'welfare queen'; dangerous cuts to the well-being of families I had assisted in Indianapolis. But more so, I longed for my audience of conservative economists—including my thesis advisor and coauthor, Deirdre McCloskey, who nevertheless supported me—to hear the spoken word, the actual rhetoric of the anti-welfare policy they and the US government advocated, and I, in my dissertation, was denouncing and predicting to fail on its own terms, the 'Personal Responsibility and Work Opportunity Reconciliation Act', which it did.[4] Fail, that is.

2 | JEDI STATISTICS

JEDI is an acronym standing for justice, equity, diversity, and inclusion, jointly distributed; in other words, JEDI, as I understand it, is centrally concerned with justice *and* equity *and* diversity *and* inclusion. JEDI statistics in general, then, is an approach which observes and stands up for JEDI in all things statistical (and in life, generally speaking). American Statistical Association President Rob Santos (2021) put it this way

> The way I see it, we are all 'JEDIs' at some level, since we all seek to advance and support a society that values all people (at least I hope we do). Like anything else, becoming a JEDI is not a dichotomy but a matter of degree. To me, being a JEDI is a developmental journey toward being the best professional/manager/researcher/human you can be. And the road traveled requires JEDI principles to guide you.

We belong to a global community, and bring attention to and solutions for algorithms of oppression and the intersectional internet (Noble, 2018; Noble & Tynes, 2016); friends and allies of LGBTQ+ and a more inclusive data science and statistics (Benn, 2019); we shudder at the imposition of American racism, neoliberalism, Protestantism, and neocolonialism in randomized controlled trials (RCTs) conducted on impoverished people of colour (Ziliak & Teather-Posadas, 2016); not to mention the racial wealth gap and some have made a strong case for reparations (Darity & Kirsten Mullen, 2020); and much more: profiling by name, digital divide including rural versus urban internet access, representative bias, double marginalization, statistical discrimination, and metrics deriving from stratification economics (Logan & Parman, 2015) to name a few.

It's not a job requirement but those of us who work to further 'JEDI' principles, practices and institutions tend to be motivated less by mathematics and a lot more by empathy and genuine love of others; though definitely geeked out on math, we tend to be motivated more by equality and justice, by dignity, freedom, creativity and capabilities; of just and fair chances of belonging, flourishing, being kind and achieving happiness for all (hooks, 1994). As Bob Marley said, 'One love, one heart, let's get together and feel all right.'

There is a lot of buzz about all things 'JEDI'. Much of the buzz is motivated by negative and sceptical types, motivated by one reason or another, mostly fear, it seems, nostalgia inside the academy, but especially outside—in politics, business and journalism. Most employ less than JEDI assumptions, language and behaviour regarding critical race theory and good, old-fashioned apple pie; the JEDI are unmoved. JEDI statistics is, then, the systematic study and application of JEDI principles, practices and concepts to a science and society striving in solidarity to be antiracist and inclusive.

3 | *UBUNTU* AND JEDI PRINCIPLES

What are those principles, practices, and concepts? Good question. Many statisticians and data scientists—most numbers folk—lack formal training when it comes to ethics, rhetoric, relationships and principles of social justice. By virtue of the great undead horse, logical positivism (Putnam, 2004), and the toothless 'Two Cultures' (Snow, 1959) philosophy dividing STEM from the humanities, most have not been invited to learn or write about the past and present of racism, sexism, ableism, homophobia, eugenics, colonialism, nativism and other ism's in their own fields and associations.

Fortunately, there exists a large and growing body of history, education and justice-centered thought and literature, which is accessible and available (online and in university libraries) to help us inch a bit closer towards the world of JEDI, if only one step at a time; a world where certainly every step counts.[5] Becoming JEDI, if it does not come naturally, is often a slow motion though cumulative function, perhaps not unlike the process of learning how to love and to live with others who are different from us over time, such as by gender and communication style

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[4] For example, in 1996, PRWORA and, in 1997, the related Temporary Aid to Needy Families (TANF) legislation imposed 'work requirements' yet offered nothing to disadvantaged and other low-income Americans in the form of a job guarantee or full employment policy (see Forstater, 2020; Hamilton, 2015; Kelton, 2020; Tcherneva, 2020).

[5] I am a member of the Antiracism Task Force of the American Statistical Association, a task force established by several ASA Presidents. Our group is compiling a list of sources and creating resource pages; several Task Force members have compiled and generously made available online their own resource pages (https://community.amstat.org/antiracismtaskforce/home).

(Tannen, 1990); or training monk-like with Dr. Martin Luther King, Jr. in his four-stage readiness programme, meditating prior to making a non-violent intervention for the peaceful negotiation of social justice because it, in a very real sense, is like both of these things (King, 1963 [1983]).

In his book, *No Future Without Forgiveness*, Bishop Desmond Tutu (1999, p. 31) offers up some useful language in a relevant discussion of the all-too-human context of being in charge of the Truth and Reconciliation Commission in South Africa, appointed by Nelson Mandela (Burton, 2016; Nussbaum, 2016). Tutu explores the meaning of an Nguni word, *ubuntu*, and a closely related Sotho word, *botho*, which seem to fit well a JEDI philosophy:

> It is not, 'I think, therefore I am.' It says rather: 'I am human because I belong. I participate, I share.' A person with *ubuntu* is open and available to others, affirming of others, does not feel threatened that others are able and good, for he or she has a proper self-assurance that comes from knowing that he or she belongs in a greater whole and is diminished when others are humiliated or diminished, when others are tortured or oppressed, or treated as if they were less than who they are.

JEDI life is by its nature, then, as Rob Santos puts it, 'evolving culture'—a work in progress, additive and multiplicative, no doubt, though as with the eponymous warrior-monks of *Star Wars* fame—and Bishop Tutu and family know tragically better than most—errors and switchbacks abound with JEDI work, and danger dances quickstep with the good.

Doing JEDI statistics is not just waking up and turning on the computer, nor by succeeding in getting a new publication, though that's important, too. Being JEDI for real requires something from deep inside the core, something deep within ourselves and institutions: care, love, belonging, first and foremost—mass *ubuntu*—followed closely by a transparent and inclusive process of truth and reconciliation in our jobs and professions, which I believe we have set in motion, as we stride towards the antiracist, JEDI future of statistics and society.

4 | IN THE STORIES WE LIVE

My journey in JEDI statistics began sometime around 1988, when I received at work one day a seemingly random phone call. I was an economist working in a research capacity at the unemployment office. Replying to inquiries regarding State of Indiana labour market statistics and projections (which I myself econometrically produced) was a daily part of the job at the Indiana Department of Employment and Training Services, Division of Labor Market Information.

This particular call, no longer seen as random, was from a community development specialist working in Gary, Indiana. Gary, the birthplace of Michael Jackson, the Prince of Pop, was by then a city reeling hard from massive and throbbing, structural-based unemployment catapulted primarily by an equally massive and lingering industrial and political neglect and decline. The man in Gary was curious to know the distribution of Black youth unemployment rates, ages 16–21, with the cohort data broken down by metropolitan statistical area (SMSA). In other words, he wished to compare labour market outcomes across Gary, Fort Wayne, and Indianapolis, down to Evansville. It's a good, solid, scientific question: He wanted to grasp the quantitative side of the Indiana economy from the perspective of Black youth, to estimate the size and relative amount of economic loss he knew to be accruing unequally across Indiana and elsewhere by race, age and geographic region (among other things).

'Easy, peasy. No problem, sir, I can help'. After all, I knew my Indiana MSAs; I knew my SIC codes, my SOC codes, and the US Department of Labor Occupational Outlook Handbook like the back of my hand. I am a government economist and statistician. I was confident I could help him locate recent estimates of Black youth unemployment rates in the State of Indiana. 'I'll be right with you, sir', and rested the still connected landline phone on the desk, feeling sure that my discovery of the hoped for data was moments away. I pulled up my Lotus 1-2-3 spreadsheet (no 'computer software in antiquity' jokes allowed!); I could not find Black youth unemployment rates. I asked my boss and he could not find the data. We asked his boss and he could not find them. Finally we contacted the boss's boss's boss, that is, the head of labour market information for the US Department of Labor, Chicago region. For about 1 h, we waited in anxious curiosity. I remember the chit chat, the hand-rubbing, the pacing back and forth. 'Isn't it strange', we said again and again, 'that we can't find these unemployment rates?' Then the intranet email from arrived, such as it was in the late 1980s: blurry green and white blinking characters, as if work emails happened inside the game of 1970s 'Pong'.

Part of the federal labour exchange, the Indiana Department of Employment and Training is overseen by the US Department of Labor, which sets data policy—including data dissemination and publication policy. The US Department of Labor policy was as follows: Do not distribute estimates of unemployment rates if estimates are 'not statistically significant at the 0.10 level ($p < 0.10$)'. Statistical significance. That was it! Statistical significance was being used to hide data. Understand that we had the data. The State of Indiana had estimates for the unemployment rates of Black youth for each of the labour market areas. But we were not allowed to publish. Not 'significant'. Not 'statistically significant', they mean. *But* economic *significance, I had already grasped by 1988, and told the Labor Department on the telephone, is not the same as* statistical *significance, and is usually (and certainly in this case)* more *important than mere 'statistical' significance measured by p values.*

That day more than 30 years ago, I told my colleagues in Indianapolis, 'I am going to fight this; I am going to fight statistical significance'. It's interesting to see that I have been fighting statistical significance much more than I could have imagined I would, and now successfully, at long

last, for some 30 years.[6] Statistical significance, as I have been showing now in books and research articles from McCloskey and Ziliak (1996) to Ziliak (2019), is less important than economic or ethical or clinical or social justice significance, but the latter are routinely neglected in favour of bright line rules of statistical significance. Who would be surprised if the unemployment rate in some areas of Gary exceed 40% or 50%? In some census tracts, 90%. Black youth unemployment was rarely discussed in the mainstream media and journals of the 1980s. One big reason, though not the only reason during the Reagan Era, is because Black youth unemployment rates were not published and thus did not enter the public record.

5 | JEDI AGAINST DOUBLE MARGINALIZATION

The government censoring of Black unemployment rates is an example of 'double marginalization', wherein an oppressed or discriminated person or group is taxed twice. The marginalized group is taxed once, because for example the Black youth cohort was under-sampled throughout the state and nation; and twice, the marginalized are taxed a second time, because in this case a ubiquitous, though faulty bright line rule of statistical significance, $p < 0.10$, is used to censor the data on Black youth. Usually when decisions have consequences that are less than JEDI, it is because decision makers are unheeding of JEDI from the get go. Double marginalization leads to higher prices, invisibility, non-inclusion and less opportunity for people of colour, the differently abled, and other discriminated and oppressed.

Examples abound in government statistics. The vast political, social and economic cost that is being imposed by what is in effect, double marginalization, if not triple or quadruple, in 2020 Census counts of underrepresented minorities is a major case in point. The case cuts to the heart of American democracy and wellbeing, and is well worth JEDI attention.

6 | RACE AND EUGENICS IN STATISTICS: LESS THAN JEDI HISTORY

Thus, when I was writing *The Cult of Statistical Significance* (2008), I was not startled when I went to the archives at University College London, to look at the birth of modern British statistics. Beginning in 2004, I began to read the original research and letter correspondence by scientific racists and eugenicists, Francis Galton, Karl Pearson and Ronald Fisher, among others (Ziliak & McCloskey, 2008). Not everyone applauded my emphasis on this unfortunate entanglement in history with the eminent statisticians. But this is no fly by night entanglement. Sitting in the London archives, my interest in the American history of race and eugenics in statistics had redoubled, and I circled back to my thesis research on the history of welfare and so called dependence in America. I had read Irving Fisher in grad school and examined statistical tables amassed by Francis Amasa Walker and another ASA President, John Koren (Ziliak, 2002), in my studies of social Darwinism, economic thought, anti-immigrant sentiment, and the rise and fall of the poorhouse, and wrote some about it.

The racist, colonial, anti-indigenous, anti-immigrant and eugenical rhetoric and content of Francis Walker's book and career as a military soldier and Commissioner of Indian Affairs, summarized (or better yet, romanticized) by Walker (1874) in *The Indian Question*; and years later, that of Irving Fisher (1913) in his book, *Eugenics*, followed by Fisher's role for years on the campaign trail as President of the American Eugenics Society, suffice here to make my main point. Statistics in America was not free from the Galton-Pearson-Fisher taint of racism, anti-Semitism, anti-immigration and National Eugenics; quite the opposite, in the United States as in Britain, the fellows of the Eugenics Society were not men in fur hats with horns storming the Capitol; they were men in suits, economists and statisticians, and in both nations those same men are still considered to be among the best of the best (Kevles, 1995; Leonard, 2005). Amasa Walker served as ASA president for 12 years, and was cofounder of the American Economic Association. He led two Census counts and became President of MIT. Irving Fisher, a former president of the ASA and Professor of Economics at Yale, is revered by today's macroeconomist; currently most economists continue to look the other way rather than cope with the reality of Fisher's substantial contributions to eugenics, anti-immigrant policy, and prohibition. In truth, at least 11 of the Presidents of the American Statistical Association between the 1880s and the 1940s were less than JEDI in deeply serious regards, especially Walker with the indigenous, and this story needs to be studied and aired a bit more to remind us of our past and root us in honest preparation for the antiracist future.

7 | IMPERMISSIBLE INEQUALITY AND RESTORATIVE JUSTICE

A productive path forward would be to flip the matrix, and focus our attention in research and in the workplace on 'impermissible inequalities'. What are the inequalities in wealth, income, and other economic measures of well-being, including fair opportunity to fill open positions; in law, politics and freedom of identity and association; in business networks, digital culture and the criminal justice system, among others, which must

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[6] For example, especially Ziliak and McCloskey *The Cult of Statistical Significance* (2008), the ASA statement on statistical significance and *p* values (2016), which I coauthored primarily with Ron Wasserstein, Steve Goodman, Brad Carlin, Regina Nuzzo and a few other committee members, and the 2011 US Supreme Court case, Matrixx versus Siracusano, to which Ziliak and McCloskey contributed a brief of *amici curiae*.

be rejected and restored because 'impermissible'? Some might balk. You mean there are permissible inequalities? Yes, quite a few. For example, to take a simple one, Usain Bolt runs faster than any human in previously recorded history has run. The Jamaican Olympian's achievements on the track field illustrate a large inequality in talent and competitiveness which is permitted and indeed widely celebrated.

A question we need to ask is what inequalities should be considered intolerable by JEDI standards, too much against justice as fairness, against moral law, against the spirit of *ubuntu*, what the impartial spectator and member of an oppressed group can admit of and approve? Much of the conventional literature on economic and social inequality is of the bland yes/no, is it rising or is it not rising sort; the battle lines are pre-determined by party affiliation, ideology.

In *A Theory of Justice* (1971), John Rawls has offered a lot to generations of inequality theorists—more usable theory than the modern utilitarian has (or can). Rawls appeals specifically to decision theorists, classical and Bayesian, in the formulation of his choice situation for discovering the principles of justice for guiding our basic institutions.

Most people are 'intuitionists', Rawls says. We shoot from hip when arguing for more or less primary social goods, more or less climate change, more or less this or this. Our skin colour, birth place, wealth, family and so forth bias our views, he persuasively claims, on what is best for society. Rawls attempts to establish conditions of procedural fairness that would lead in principle to justice as fairness.

Assume a randomly selected assembly of educated adults. Each person is assumed to be educated in the basics of supply and demand, social psychology, understanding that booms and busts occur, and wealth varies by race and gender and place, and so forth, that there is racism, sexism and other isms afflicting society. Working in the social contract tradition, Rawls has people choose principles of justice as fairness from behind a 'veil of ignorance'. They are in town hall like deliberation with each other, but no one knows who they are going to be when the veil is lifted and they return to the real world. Which principles survive the town hall meetings? A risk averse, maximin decision-based criterion emerges in 'reflective equilibrium' and the rational choice is for people to guarantee their institutions are guided by the following:

1. The equal liberties principle for all; and 2. The difference principle.

Thing is, in the Rawlsian world you do not know who you are going to be. When you come out from behind the veil and into the world, you might be living as one of the oppressed, impoverished, tortured, and shunned. The Rawlsian chooser does not want to risk being in that situation themselves, so they agree to the difference principle, which states:

> Inequalities between persons are permissible so long as they work to the advantage of the least favored persons in society (or group).

This may not sound earth shattering, and it's not. But the difference principle marks a big advance over less than JEDI philosophies of the past and present, and in modified form it can be improved and applied to a wide range of statistical problems and economic contexts. Rawls was a liberal; of course, he thought, inequalities exist, and some, like the extraordinary elegance of Maya Angelou's poetry, exist to everyone's good fortune. But harmful inequalities can be capped and rejected and possibly even rectified, even a liberal admits.

The economist and philosopher, Amartya Sen (2006), suggests an approach to inequality that will be judged by some more favourably than Rawls's approach. Sen suggests that Rawls is too pie in the sky with his fancy transcendental and rational choice model. To fight injustice and abolish severe injustice it is preferable to pairwise rank a list of injustices by the distance from which they deviate from that standard of living and human living, which the global impartial spectator can admit of and approve. Sen is drawing heavily not from Rawls but from a book called *The Theory of Moral Sentiments*, by Adam Smith, which offers a model more reliable than the Rawlsian chooser, and which can be used in tandem to improve upon the Rawlsian model.[7]

Sen agrees. Rawls does not complete the solution, he does not explain how the institutions work, nor for whom beyond the assumed to be rational, white, neoliberal utility or primary social goods maximizer. In particular, Rawls puts a lot of unscientific market-based faith in an alleged 'chain connection' (Rawls, 1971, pp. 66–82) of upward mobility assumed to exist between elites, middling and working and non-working, non-rich classes. Does not square with history.

Rawls assumes a world in which principles of justice are chosen by white, cisgender, able bodied people educated broadly in the social sciences, history and elementary decision theory. But that is not our world, and Rawls does not offer a feasible sample space nor external validity for making precise inferences in the JEDI world (unlike Martha Nussbaum, 2006, 2002, who definitely does, with the capabilities approach to social justice for human and non-human persons inclusively). The existence of 'double consciousness' (DuBois, 1903) alone can render the Rawlsian chooser an unreliable narrator. Add Sen's-and-DuBois's-and Darity's-and-Mullen's distance metrics to Nussbaum's capability space and now we are getting somewhere. Still, *a fortiori*, the message is clear: It is right and just and fair to invest in JEDI, to create just and fair institutions, and to provide resources for JEDI statisticians to keep finding ways to do so.

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[7] As Smith (1790 [1759]) writes in Chapter 3 of *TMS* regarding the 'unsocial passions': 'There is no passion, of which the human mind is capable, concerning whose justness we ought to be so doubtful, concerning whose indulgence we ought so carefully to consult our natural sense of propriety, or so diligently to consider what will be the sentiments of the cool and impartial spectator.'

DATA AVAILABILITY STATEMENT

n/a

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