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NOTE
THE “INEXORABLE ZERO”

BY
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THE “INEXORABLE ZERO”*

[F]ine tuning of the statistics could not have obscured the glaring absence of minority [long-distance] drivers [T]he company’s inability to rebut the inference of discrimination came not from a misuse of statistics but from “the inexorable zero.”¹

The Supreme Court first uttered the phrase “inexorable zero” a quarter-century ago in *International Brotherhood of Teamsters v. United States*,² a landmark Title VII case. Ever since, this enigmatic name for a rule of inference has echoed across legal argument about segregation, discrimination, and affirmative action.³ Justice O’Connor, for instance, cited the “inexorable zero” in a major sex discrimination decision upholding an affirmative action policy for female public works employees.⁴ Last year, amici in support of the respondents in *Grutter v. Bollinger* imported Justice O’Connor’s reasoning into the domain of admissions decisions at elite professional schools.⁵

As evocative as the phrase may be, the precise doctrinal meaning of the “inexorable zero” has remained elusive.⁶ Allegations including the

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¹ Int’l Bhd. of Teamsters v. United States, 431 U.S. 324, 342 n.23 (1977) (quoting *United States v. T.I.M.E.-D.C., Inc.*, 517 F.2d 299, 315 (5th Cir. 1975)).

² *Id.*

³ Notably, the “inexorable zero” need not be exactly zero; the context of *Teamsters* suggests that the term “inexorable zero” encompasses very small proportions as well. In footnote 23, where the Court introduced the term “inexorable zero,” it did so immediately after providing data showing that thirteen out of nearly two thousand line drivers (that is, less than one percent) were minorities. *Id.* Justice Marshall’s dissent in *City of Richmond v. J.A. Croson Co.* supports this reading, suggesting that the relative share of public contracting funds received by minority-owned businesses in that case — one seventy-fifth (or about 1.3 percent) — qualified as an “inexorable zero.” 488 U.S. 469, 542 (1989) (Marshall, J., dissenting).

⁴ *Johnson v. Transp. Agency*, 480 U.S. 616, 656–57 (1987) (O’Connor, J., concurring).

⁵ Brief of American Law Deans Association as Amicus Curiae in Support of Respondents at 3, *Grutter v. Bollinger*, 123 S. Ct. 2325 (2003) (No. 02-241) (“In the face of [the distribution of LSAT scores and GPAs among minority law school applicants], racial balance is an irrelevant impossibility. Law schools seek instead to avoid approaching ‘the inexorable zero.’” (citations omitted)); see also Brief of the Harvard Black Law Students Association et al. as Amici Curiae Supporting Respondents at 21, *Grutter* (No. 02-241) (“For black students, a shift to a color-blind or race-neutral admissions system would lead to admissions results that are tantamount to ‘the inexorable zero.’” (citations omitted)).

⁶ The exact meaning of the phrase itself is hardly transparent. “Inexorable” as applied to persons (or their actions or attributes) or things (chiefly personified) means “[i]ncapable of being persuaded or moved by entreaty; that cannot be prevailed upon to yield to request, esp. in the way of mercy or indulgence; not to be moved from one’s purpose or determination; relentless, rigidly severe.” 7 THE OXFORD ENGLISH DICTIONARY 911 (2d ed. 1989). One possible explanation for the Court’s choice of words is suggested by the Seventh Circuit: “that [the employer’s] promotional procedure inexorably maintained the existing zero [of female employees] is strong evidence that it was intended to do so.” *Lloyd v. Phillips Bros.*, 25 F.3d 518, 524 n.4 (7th Cir. 1994).

exclusion of women as referees in the National Basketball Association (NBA),⁷ racial segregation at a Coca-Cola bottling plant,⁸ and the reputation of a famous Miami Beach restaurant for hiring only men as servers⁹ have in recent years continued to inspire federal trial courts to invoke the inexorable zero, citing *Teamsters*. They have done so not only in Title VII systemic disparate treatment or “pattern and practice” cases such as *Teamsters*, but also in cases involving disparate impact, individual disparate treatment, and other employment discrimination statutes.

These district courts are scattered in their readings of the rule but tend to center on a core understanding: based on a plaintiff’s showing that an employer has hired zero or a negligible number of women or minorities, and assuming that at least some women or minorities were available for the job in question, a court may draw a prima facie inference of discriminatory motive against the employer. In effect, courts have the discretion to exempt zero or near-zero proportions from the tests of statistical significance typically involved in drawing such an inference. The resulting inference, under this approach, serves as a presumption-shifting device for eliciting information from the defendant employer, the party more knowledgeable about the challenged employment decisions, policies, or outcomes.¹⁰

This central tendency at the trial level tracks the intuition among some circuit courts that evidence of an inexorable zero can serve as a telling symptom of hidden attitudes or hiring practices that work to exclude women or minorities from whole categories of jobs. No court, however, has articulated an analytical rationale for granting the inexorable zero such special inferential force. Nor have commentators been more forthcoming.¹¹ This lacuna in elaboration has left the rule exposed to erosion by a competing rhetoric claiming that zero occupies

⁷ See *Ortiz-Del Valle v. Nat’l Basketball Ass’n*, 42 F. Supp. 2d 334, 337 n.1 (S.D.N.Y. 1999).

⁸ See *Ewing v. Coca Cola Bottling Co.*, No. 00 CIV. 7020(CM), 2001 WL 767070, at *6 (S.D.N.Y. June 25, 2001).

⁹ See *EEOC v. Joe’s Stone Crab, Inc.*, 969 F. Supp. 727, 736–37, 739 (S.D. Fla. 1997).

¹⁰ See, e.g., *Int’l Bhd. of Teamsters v. United States*, 431 U.S. 324, 359–60 & n.45 (1977) (explaining and affirming the information-eliciting function of shifting the presumption against the employer); cf. *Johnson v. Transp. Agency*, 480 U.S. 616, 665 n.4 (1987) (Scalia, J., dissenting) (“[E]ven an absolute zero is not ‘inexorable.’ While it may inexorably provide ‘firm basis’ for belief in the mind of an outside observer [that sex discrimination occurred], it cannot conclusively establish such a belief *on the employer’s part*, since he may be aware of the particular reasons that account for the zero.”).

¹¹ Perhaps the clearest exposition is in GEORGE RUTHERGLEN, *EMPLOYMENT DISCRIMINATION LAW* (2001), which describes the inexorable zero inference as “the simple model” of statistical analysis, based on “rough approximation” and “general common sense,” wherein the “Court found no need to rely on even elementary tests of statistical significance.” *Id.* at 59–60; cf. DAVID C. BALDUS & JAMES W.L. COLE, *STATISTICAL PROOF OF DISCRIMINATION* § 10.111[2] (Supp. 1987) (noting that courts have disregarded statistical significance testing in cases of the inexorable zero, but advising against this practice).

no special place on the number line and therefore should be treated like any other value for the purposes of statistical inference. In the Seventh Circuit, two opinions have hinted that the inexorable zero inference is valuable only as a proxy for the conventional statistical method of testing disparities.¹² And the Fourth Circuit, which like the Seventh Circuit formerly favored the rule, has reversed course, rejecting inexorable zero evidence absent statistical comparison.¹³

This Note seeks to advance both analytical and doctrinal understanding of this peculiar form of inference, which seems to privilege a single number over more sophisticated statistical analyses. Parts I and II recount the origins of the rule in *Teamsters* and document the current circuit split. Part III articulates some formal theoretical grounds upon which the intuitive (if inchoate) appeal of the inexorable zero inference might rest. It also reminds the reader that standard deviation analysis is not an obviously superior diagnostic, in that it expressly does *not* calculate the likelihood that an employer behaved illegally, but rather calculates a parameter reflecting the potential role of pure chance. In Part IV, this Note returns to the case law to excavate another possible intuition underlying the inexorable zero inference that the *Teamsters* Court may have contemplated at its genesis: that the absence of women or minorities from a workforce may discourage potential job candidates from applying. In conclusion, Part V emphasizes that, given the availability of standard deviation analysis, whether the inexorable zero inference is useful as an alternative and complementary diagnostic is primarily an empirical matter of how courts view the consequences of false-positive versus false-negative prima facie inferences of discrimination — in jargon, Type I versus Type II errors, or in cliché, raising false alarms versus ignoring the smoke.

I. HOW ZERO CAME TO BE "INEXORABLE"

Although courts accepted statistical evidence in discrimination cases before *Teamsters*,¹⁴ that case is known for creating the standard framework for using statistics to support a prima facie inference of a "pattern or practice" of intentional discrimination by an employer under Title VII and other employment discrimination laws.¹⁵ In systemic

¹² See *Hill v. Ross*, 183 F.3d 586, 592 (7th Cir. 1999); *EEOC v. O&G Spring & Wire Forms Specialty Co.*, 38 F.3d 872, 877 (7th Cir. 1994).

¹³ See *Carter v. Ball*, 33 F.3d 450, 456–57 (4th Cir. 1994).

¹⁴ For a classic and insightful account of the early history of statistical analysis in employment discrimination cases, see Paul Meier et al., *What Happened in Hazelwood: Statistics, Employment Discrimination, and the 80% Rule*, 1984 AM. B. FOUND. RES. J. 139 (1984).

¹⁵ See *Teamsters*, 431 U.S. at 339 ("We have repeatedly approved the use of statistical proof, where it reached proportions comparable to those in this case, to establish a prima facie case of racial discrimination in jury selection cases. Statistics are equally competent in proving employ-

disparate treatment cases, a prima facie inference establishes a presumption that each challenged employment decision is tainted with illegal motivation; the burden then shifts to the employer to defend each decision. Holding that such an inference can be supported by “the mere fact of differences in treatment,”¹⁶ *Teamsters* recognized two kinds of statistical evidence as probative of such differences: first, data showing a “long-lasting and gross disparity” between the representation of protected groups within a workforce relative to a relevant comparison population;¹⁷ and second, data showing the “glaring absence” of protected minorities from desired positions — that is, an “inexorable zero.”¹⁸

Naturally, these two types of statistical evidence overlap, as they did in *Teamsters*, whenever an inexorable zero of minorities or women, compared to a benchmark proportion, also qualifies as a gross disparity. A workforce with fifteen employees, for example, at the lower limit of the reach of Title VII, would register a statistically significant disparity at the conventional five-percent significance level, using the usual binomial formula, if zero employees were minorities and if the relevant comparison population had greater than eighteen percent minorities. For a workforce with one hundred employees, the zero would register as significant if the population had greater than three percent minorities. As alternative diagnostics, disparity analysis and the inexorable zero inference may be seen as supplementing each other in cases where they do not overlap.

A. Disparity Analysis

According to *Teamsters*, “[s]tatistics showing racial or ethnic imbalance” can serve as a “telltale sign of purposeful discrimination.”¹⁹

ment discrimination.” (citations omitted). The opinion describes “pattern or practice” as discrimination of a “repeated, routine, or generalized nature.” *Id.* at 336 & n.16 (quoting Sen. Hubert Humphrey) (internal quotation marks omitted). To show such systemic disparate treatment, the plaintiff must prove not “isolated” or “sporadic” discriminatory acts but rather that discrimination was a company’s “standard operating procedure.” *Id.*

¹⁶ *Id.* at 335 n.15 (“Proof of discriminatory motive is critical [to disparate treatment liability], although it can in some situations be inferred from the mere fact of differences in treatment.”).

¹⁷ *Id.* at 339 n.20.

¹⁸ *Id.* at 342 n.23 (quoting *United States v. T.I.M.E.-D.C., Inc.*, 517 F.2d 299, 315 (5th Cir. 1975)).

¹⁹ *Id.* at 339 n.20 (“Statistics showing racial or ethnic imbalance are probative in a case such as this one only because such imbalance is often a telltale sign of purposeful discrimination; absent explanation, it is ordinarily to be expected that nondiscriminatory hiring practices will in time result in a work force more or less representative of the racial and ethnic composition of the population in the community from which employees are hired. Evidence of longlasting and gross disparity between the composition of a work force and that of the general population thus may be significant even though § 703(j) makes clear that Title VII imposes no requirement that a work force mirror the general population.” (citations omitted)).

Teamsters did not articulate how great the “imbalance” would need to be, but the Court has since acknowledged the conventions of statistical inference used in the social sciences. In *Hazelwood School District v. United States*,²⁰ the Court recognized — but expressly did not require — the use of a statistical technique known as standard deviation analysis to decide whether a given disparity rises to the level of “gross statistical disparity” that would justify an inference of intentional discrimination.²¹ The *Hazelwood* Court applied a standard suggested by *Castaneda v. Partida*,²² in which the Court made note of — but did not rely on — a level of disparity that would be “suspect to a social scientist.”²³ Essentially, standard deviation analysis calculates the probability that a hypothetical hiring process, randomly sampling from the comparison population, could have generated the observed hiring disparity or a greater one; the lower those chances, the conventional story goes, the more suggestive the evidence that a nonrandom factor such as discrimination contributed to the disparity.²⁴

B. The “Inexorable Zero”

The term “inexorable zero” appears in the oft-quoted footnote 23 of the *Teamsters* opinion: “[F]ine tuning of the statistics could not have obscured the glaring absence of minority [long-distance] drivers . . . [T]he company’s inability to rebut the inference of discrimination came not from a misuse of statistics but from ‘the inexorable zero.’”²⁵ This footnote explains that because evidence of exclusion was so clear from the lack of minorities holding the desired jobs, the *Teamsters* Court was willing to reject the defendant’s argument that the construction of a comparison population was flawed.²⁶

²⁰ 433 U.S. 299 (1977).

²¹ See *id.* at 308 n.14 (“A precise method of measuring the significance of such statistical disparities was explained in *Castaneda v. Partida*. It involves calculation of the ‘standard deviation’ as a measure of predicted fluctuations from the expected value of a sample.” (citation omitted) (citing *Castaneda*, 430 U.S. 482, 496 n.17 (1977))); see also *id.* at 311 n.17 (“These observations are not intended to suggest that precise calculations of statistical significance are necessary in employing statistical proof, but merely to highlight the importance of the choice of the relevant labor market area.”).

²² 430 U.S. 482 (1977).

²³ *Id.* at 496 n.17 (“As a general rule for such large samples, if the difference between the expected value and the observed number is greater than two or three standard deviations, then the hypothesis that the jury drawing was random would be suspect to a social scientist.”).

²⁴ Since *Hazelwood*, the Court has also approved the use of such other methods as regression analysis, a statistical technique that attributes weights to potential factors, like race or sex, in predicting employment decisions. For example, in *Bazemore v. Friday*, 478 U.S. 385 (1986), the Court approved the use of multiple regression analysis even when not all relevant factors are considered. *Id.* at 399–401.

²⁵ Int’l Bhd. of Teamsters v. United States, 431 U.S. 324, 342 n.23 (1977).

²⁶ See *id.* (“At best, [the defendant’s] attacks [on the statistical evidence] go only to the accuracy of the comparison between the composition of the company’s work force at various terminals

Generously construed, this language would seem to permit a single statistic — the number of minorities or women, if zero or nearly zero — to stand alone in supporting an inference of discrimination. At one point, the opinion appears to support this reading, noting the absence of minorities without referring to a comparison pool or other complementary data: “Between July 2, 1965, and January 1, 1969, hundreds of line drivers were hired systemwide, either from the outside or from the ranks of employees filling other jobs within the company. None was a Negro.”²⁷ Yet elsewhere in the opinion, the number zero appears to be embedded in an implicit statistical comparison. For example, the opinion suggests that the all-white employment of line drivers was all the more striking at those terminals that had larger minority populations.²⁸ And, arguably, where the opinion neglects to mention a comparison group, one might be implied by an understanding that at least some qualified minorities were available for the job.

Nonetheless, the *Teamsters* Court’s frustration with the employer’s attacks on the government’s choice of statistics and the Court’s consequent reliance on the inexorable zero evidence suggest that the Court sought to position the inexorable zero inference as an alternative diagnostic independent of more complicated statistical analyses. Among other possible reasons for doing so, the inexorable zero inference, unlike standard deviation analysis, does not require precise delineation of a comparison pool,²⁹ which can be subject to extensive wrangling over econometric esoterica by expert witnesses. The opinion does acknowledge the potential importance of identifying a qualified labor pool,³⁰ but it does not make that paramount. Quite the opposite, it protects evidence that minorities “were overwhelmingly excluded” — the inexorable zero — against the defendant’s “narrower attacks” on the comparison population presented by the government.³¹

and the general population of the surrounding communities. They detract little from the Government’s further showing that Negroes and Spanish-surnamed Americans who were hired were overwhelmingly excluded from line-driver jobs.”).

²⁷ *Id.* at 341 n.21.

²⁸ *See id.* at 337 n.17 (“In Atlanta, for instance, Negroes composed 22.35% of the population in the surrounding metropolitan area and 51.31% of the population in the city proper. The company’s Atlanta terminal employed 57 line drivers. All were white. In Los Angeles, 10.84% of the greater metropolitan population and 17.88% of the city population were Negro. But at the company’s two Los Angeles terminals there was not a single Negro among the 374 line drivers.”).

²⁹ *See United States v. City of Belleville*, No. 93CV0799-PER, 1995 WL 1943014, at *4 & n.2 (S.D. Ill. Aug. 8, 1995).

³⁰ *Teamsters*, 431 U.S. at 339 n.20 (noting that “evidence showing that the figures for the general population might not accurately reflect the pool of qualified job applicants would also be relevant” for evaluating the usefulness of comparisons using general population statistics).

³¹ *Id.* at 342 n.23.

II. INVOKING THE INEXORABLE ZERO

Federal district and circuit courts have not shied away from invoking the inexorable zero rule, but they have tended to avoid explaining it. This reluctance among courts to justify or even to clarify the rule may be thwarting uniformity in application. Nevertheless, patterns have emerged even where consensus has not.

Recent interpretations of the rule by federal circuit and district courts map roughly onto three views. First, in the dominant view among the circuits, an inexorable zero represents a "glaring absence" of women or minorities and serves as an indicator of an employer's attitude toward hiring them or of practices that completely deter or screen them out. The most enthusiastic district courts have deemed inexorable zero evidence alone to be sufficient; more restrained district courts tend to require some additional evidence, such as a showing that a meaningful number of women or minorities were actually available for the job. A second and sharply opposing view is found in a Fourth Circuit opinion holding that an inexorable zero represents a "mere absence" of minorities — and therefore, without further statistical analysis, indicates nothing about employment discrimination.³² Third, in a view emerging from recent Seventh Circuit opinions, an inexorable zero may be informative, but only because the disparity between a zero (or near-zero) and the relevant comparison group is often statistically significant under standard deviation analysis.³³ In this view, the inexorable zero at best serves only as a convenient proxy for disparity analysis.

This Note's typology of the informational value that courts have assigned to the inexorable zero locates centers of gravity in the case law rather than disconnected doctrinal spaces. Courts appearing to view the inexorable zero alone as sufficient for a prima facie inference, after all, might be seen as assuming implicitly the availability of some number of female or minority workers. Moreover, because in nearly all cases inexorable zero evidence has been accompanied by anecdotal or other nonstatistical evidence, only rarely has a case relied solely on the inexorable zero, even if in theory such evidence were to suffice doctrinally for a prima facie inference of employment discrimination.³⁴ Still, these three interpretations of the inexorable zero — as a "glaring absence" of women and minorities, as a "mere absence," and as a

³² See *Carter v. Ball*, 33 F.3d 450, 456–57 (4th Cir. 1994).

³³ See *Hill v. Ross*, 183 F.3d 586, 592 (7th Cir. 1999); *EEOC v. O&G Spring & Wire Forms Specialty Co.*, 38 F.3d 872, 877 (7th Cir. 1994).

³⁴ Cf. *Teamsters*, 431 U.S. at 338 ("The Government bolstered its statistical evidence with the testimony of individuals who recounted over 40 specific instances of discrimination.").

proxy for disparity analysis — identify a dimension along which courts have diverged.

A. *Zero as a “Glaring Absence”*

Zero has a “peculiarly persuasive quality,” according to the Seventh Circuit’s invocation of the inexorable zero in *Loyd v. Phillips Bros.*,³⁵ a sex discrimination case against a bookbindery. Noting that a “100% sex-segregated workforce is highly suspicious and is sometimes alone sufficient to support judgment for the plaintiff,” the Seventh Circuit held that the district court erred in failing to consider this evidence of an inexorable zero.³⁶ The *Loyd* court proceeded to draw a direct connection between this evidence and an inference of intentional discrimination: “that [the employer’s] promotional procedure inexorably maintained the existing zero is strong evidence that it was intended to do so.”³⁷

An earlier Fifth Circuit sex discrimination case, *Capaci v. Katz & Besthoff, Inc.*,³⁸ generated an oft-quoted statement of this dominant view.³⁹ Frustrated with manipulation of the statistics by both parties, the court made special note of the inexorable zero rule even as it weighed other statistical analyses, noting with a flourish: “We differ with the defendant’s suggestion that ‘zero is just a number.’ To the noble theoretician predicting the collisions of weightless elephants on frictionless roller skates, zero may be just another integer, but to us it carries special significance in discerning firm policies and attitudes.”⁴⁰

³⁵ 25 F.3d 518, 524 n.4 (7th Cir. 1994) (describing and citing *Teamsters*, 431 U.S. at 342 n.23).

³⁶ *Id.*

³⁷ *Id.*

³⁸ 711 F.2d 647 (5th Cir. 1983), *cert. denied*, 466 U.S. 927 (1984).

³⁹ See, e.g., EEOC v. Atlas Paper Box Co., 868 F.2d 1487, 1501 n.21 (6th Cir. 1989) (citing *Capaci*’s discussion of the “inexorable zero” as representative of the “[n]umerous courts [that] have held that such overwhelming statistics are virtually impossible to rebut in defending a disparate impact claim”); EEOC v. Andrew Corp., No. 81 C 4359, 1989 WL 32884, at *13–14 (N.D. Ill. Apr. 3, 1989) (quoting *Capaci*’s passage on the prominence of zero to argue against results from standard deviation analysis and to support the finding that “[t]he data in this case respecting Black office and clerical workers is dominated by the ‘inexorable zero’ and cannot be ‘explained away’”); Calloway v. Westinghouse Elec. Corp., 642 F. Supp. 663, 695–98 (M.D. Ga. 1986) (finding *Capaci*’s “inexorable zero” discussion “particularly relevant” in showing a prima facie case of disparate treatment among races in the selection of supervisors where the evidence “show[ed] that there were no black managers or supervisors until 1972,” obviating the need to adjust statistics for employment qualifications).

The *Capaci* logic has not always prevailed, however, even in the Fifth Circuit. See EEOC v. Turtle Creek Mansion Corp., CIV No. 3:93-CV-1649-H, 1995 WL 478833, at *9–11 (N.D. Tex. May 18, 1995) (in a waitstaff hiring case, citing *Capaci* for discussion of “inexorable zero” and treating the inexorable zero as distinct from “statistical evidence,” but finding that the small numbers hired, combined with the defendant’s assertions that the pool of qualified applicants was small, nevertheless sufficed to rebut the inference of sex discrimination).

⁴⁰ *Capaci*, 711 F.2d at 662; see also *id.* (“Evidence of two or three acts of hiring women as manager trainees during this period might not have affected the statistical significance of the tests

For those district courts that apply the rule most aggressively, an inexorable zero "speaks volumes" for itself, and no other statistics are necessary to support a prima facie inference of discrimination.⁴¹ In the case of women referees in the NBA, *Ortiz-Del Valle v. National Basketball Ass'n*,⁴² the Southern District of New York recognized that evidence of an inexorable zero can support a jury's finding of discrimination against a motion for judgment as a matter of law.⁴³ The court suggested that the small number of hiring decisions involved may reduce the inferential force of the inexorable zero but also warned that the zero itself may affect the quality of the statistical evidence — specifically, it could contribute to the dearth of women or minorities in the applicant pool by discouraging them.⁴⁴ Likewise, in *Ewing v. Coca Cola Bottling Co.*,⁴⁵ a case of racial and ethnic discrimination at a New York bottling plant, the court found a claim noting the inexorable zero sufficient to defeat a motion to dismiss: a near-zero promotion rate of minorities into higher-skilled jobs would reflect de facto segregation and therefore would support an inference of intentional discrimination.⁴⁶

In *Barner v. City of Harvey*,⁴⁷ the Northern District of Illinois adapted this interpretation to firings,⁴⁸ finding that the inexorable zero of nonblacks among dozens of laid-off police officers strongly supported an inference of discriminatory terminations.⁴⁹ And in an extension to disparate impact liability, in *Victory v. Hewlett-Packard*⁵⁰ the

performed by the experts, but it would indicate at least some willingness to consider women as equals in firm management. Perhaps for this reason, the courts have been particularly dubious of attempts by employers to explain away 'the inexorable zero' when the hiring columns are tallied.").

⁴¹ See *Barner v. City of Harvey*, No. 95 C 3316, 1998 WL 664951, at *50 (N.D. Ill. Sept. 18, 1998) ("In cases, such as this one, the 'inexorable zero' speaks volumes and clearly supports an inference of discrimination.").

⁴² 42 F. Supp. 2d 33 (S.D.N.Y. 1999).

⁴³ *Id.* at 337 n.1.

⁴⁴ *Id.* ("[T]his lack of [applicant pool] evidence may itself be attributable to the 'inexorable zero.' . . . [A]s plaintiff has pointed out, in this case a policy barring women from employment as referees may have deterred other women from applying for the position.").

⁴⁵ No. 00 CIV. 7020(CM), 2001 WL 767070 (S.D.N.Y. June 25, 2001).

⁴⁶ *Id.* at *5-6 ("While this is not the case of the strict 'inexorable [z]ero,' given [the promotion of one minority employee], the allegations of significant segregation of the production workforce . . . [are] a sure sign of discrimination.").

⁴⁷ No. 95 C 3316, 1998 WL 664951 (N.D. Ill. Sept. 18, 1998).

⁴⁸ *Id.* at *51 ("Defendants argue that the 'inexorable zero' is limited to hiring or promotion cases. This argument is specious. While it is true that the cases that have dealt with the 'inexorable zero' are hiring cases, there is neither reason nor case law behind the claim that 'zero' somehow means something less in a class action case dealing with allegedly discriminatory firings.").

⁴⁹ *Id.* at *50.

⁵⁰ 34 F. Supp. 2d 809 (E.D.N.Y. 1999). An inexorable zero, even if probative of causation as it was in *Victory*, would not likely overcome the general requirement under disparate impact theory

Eastern District of New York read *Teamsters* as holding that an inexorable zero standing alone could support a disparate impact claim of sex discrimination in promotions, asserting that “[t]he Supreme Court has repeatedly countenanced the use of statistical evidence, and evidence of the absence of a single minority employee being hired, labeled the ‘inexorable zero,’ would in and of itself support an inference of discrimination.”⁵¹ Although disparate impact liability typically turns on statistical comparisons, the *Victory* court, apparently dismissive of the more sophisticated statistical analyses offered by the parties,⁵² found older Second and Seventh Circuit authority for rejecting the need to “reference appropriate workpool”⁵³ or to take qualifications into account.⁵⁴

A more restrained variant of the “glaring absence” view is that the inexorable zero inference also requires a basic showing that at least some qualified women or minorities were in fact available for the job or position, but it does not require a formal comparison of the actual workforce against a precisely defined qualified labor pool. The district court in *United States v. City of Belleville*,⁵⁵ in approving a consent decree, found that the government’s showing of inexorable zeroes of

of identifying a specific employment practice alleged to generate the disparity. For example, the Southern District of New York, though willing to find disparate treatment in *Ewing*, refused to relax this requirement in *Campbell v. Alliance National Inc.*, 107 F. Supp. 2d 234, 242–43 (S.D.N.Y. 2000).

⁵¹ *Victory*, 34 F. Supp. 2d at 823 (citation omitted). Applying this “glaring absence” interpretation of the rule to the facts, the *Victory* court concluded that “[t]he complete lack of female participation in management is highly persuasive evidence of a disparate impact claim.” *Id.* at 824.

⁵² *Id.* at 824 (“Statisticians may wish to quibble over two-tenths of one percent, and the meaning lying therein, which, at this juncture, this Court views as a distinction without a difference. Resolution of the battle of experts is a matter best suited for the trier of fact.”). The court’s language is ambiguous as to whether the fact of the inexorable zero or the need for a trier of fact to handle the statistical analysis is the more important reason for its rejection of the defendant’s motion for summary judgment.

⁵³ *Id.* (citing *Babrocky v. Jewel Food Co.*, 773 F.2d 857, 867 n.7 (7th Cir. 1985)).

⁵⁴ *Id.* (citing *Grant v. Bethlehem Steel Corp.*, 635 F.2d 1007, 1015 (2d Cir. 1980)). A more recent Second Circuit opinion, however, placed less conceptual distance between inexorable zero evidence and other statistical evidence in the disparate impact context. In *NAACP v. Town of East Haven*, 70 F.3d 219 (2d Cir. 1995), the court exhorted the district court, on remand, to consider statistical evidence and noted that “in doing so [the district court] must also consider the fact of the ‘inexorable zero.’” *Id.* at 225. The opinion, however, also suggested that the statistical evidence offered in the case included both hypothesis-testing and the inexorable zero: “The appellants contend that the Town’s failure ever to hire a full-time black employee could not be explained by normal variance.” *Id.* Moreover, it described the inexorable zero as “evidence that an employer in an area with a sizeable black population has never hired a single black employee — which, by itself, supports an inference of discrimination.” *Id.* (citations omitted). This reference to the size of the town’s black population, although not exactly referring to the size of the qualified African-American labor pool, does suggest some attention to the availability of African-American workers, in line with a more constrained variant of the “glaring absence” interpretation.

⁵⁵ No. 93CV0799-PER, 1995 WL 1943014 (S.D. Ill. Aug. 8, 1995).

women and minorities in certain municipal jobs sufficed to make out a *prima facie* case, regardless of the exact labor market chosen for comparison.⁵⁶ And in *Lumpkin v. Brown*,⁵⁷ an Illinois disparate impact suit against the Department of Veterans Affairs for age discrimination, the district court found a hiring program illegal under disparate impact theory based on evidence that "100% of the positions at issue . . . were held by a group all of whom were under 40" despite the fact that the qualified labor pool contained workers older than forty.⁵⁸ The court cited the average ages of the workers to show that some excluded workers must have been over forty, but it did not cite the proportions of older workers in the available pool.

B. Zero as "Mere Absence"

Not all circuits have consistently taken zero to be an exceptional number. The Fourth Circuit has withdrawn its support for the inexorable zero inference, holding in *Carter v. Ball*⁵⁹ that "[t]he mere absence of minority employees in upper-level positions does not suffice to prove a *prima facie* case of discrimination without a comparison to the relevant labor pool."⁶⁰ The *Carter* opinion declined to cite *Teamsters*, even while echoing it: whereas the *Teamsters* opinion spoke of the "glaring absence of minorit[ies],"⁶¹ finding it probative, the *Carter* opinion twice noted the "mere absence of minorit[ies],"⁶² finding it inconsequential. *Carter* also contradicted, without citing, an earlier Fourth Circuit opinion in *United States v. Gregory*,⁶³ which forgave the absence of a benchmark pool, citing the inexorable zero rule.⁶⁴ The *Gregory* court had gone so far as to suggest a way for the courts to get around a lack of data: "judicial notice" that women must have been available in the labor pool.⁶⁵ Whatever its relation to *Gregory*

⁵⁶ *Id.* at *4 & n.2.

⁵⁷ 960 F. Supp. 1339 (N.D. Ill. 1997).

⁵⁸ *Id.* at 1352-53 ("Indeed, in this situation the observed number of members of the protected group (age 40+) who benefited from the challenged employment practice . . . is the 'inexorable zero.'" (citations omitted)).

⁵⁹ 33 F.3d 450 (4th Cir. 1994).

⁶⁰ *Id.* at 456.

⁶¹ *Int'l Bhd. of Teamsters v. United States*, 431 U.S. 324, 342 n.23 (1977).

⁶² *Carter*, 33 F.3d at 456, 457.

⁶³ 871 F.2d 1239 (4th Cir. 1989).

⁶⁴ *Id.* at 1245 n.20 ("The Supreme Court does not require fine tuning of statistics when the inference of discrimination arises from 'the inexorable zero.' In other words, the focus in this case may properly be upon the fact that the Sheriff's Office has *never* hired a woman as a deputy." (citation omitted)).

⁶⁵ *Id.* at 1245 ("Although the Government apparently did not supply census data demonstrating the percentage of women in the labor pool in Patrick County, we take judicial notice of the fact that no less than 50% of the relevant labor pool is comprised of women."). A court's assumption about or judicial notice of the pool of minorities who were available may be more convincing when the minorities at issue are women, as was the case in *Gregory*; such an implicit assumption

and *Teamsters*, *Carter's* instruction to the trial courts is clear; a North Carolina district court has already cited that case as authority for rejecting an inexorable zero argument.⁶⁶ A district court in the Sixth Circuit has also aligned with this position: plaintiffs suing the Local 862 of the United Auto Workers in Kentucky failed to prevail on an inexorable zero argument at summary judgment because the court ruled that some further statistical evidence was necessary to “complement” the fact that no African-American members had been promoted. The court specifically noted the absence of data on the number of African Americans qualified for or desiring the job.⁶⁷

C. Zero as a Proxy for Disparity Analysis

In a line of recent cases, the Seventh Circuit appears to have retreated from its interpretation in *Loyd*⁶⁸ without overturning it. Even if *Loyd* survives as precedent, the more recent cases can be read as promoting a merger of the inexorable zero rule into disparity analysis: inexorable zero evidence may still have inferential value, per *Loyd*, but only because zeroes and near-zeroes would very often qualify as statistically significant disparities from most benchmarks, given most sample sizes. Since *Loyd*, two published opinions have nudged the court toward a merger of the rules. In the same year as *Loyd*, the Seventh Circuit in *EEOC v. O&G Spring & Wire Forms Specialty Co.*⁶⁹ recognized an inexorable zero only by reference to the district court's application of standard deviation analysis to the zero.⁷⁰ In *Hill v. Ross*,⁷¹ the court provided a calculation to complement Justice O'Connor's mention of the inexorable zero in *Johnson*, showing how the zero in that case would have registered as a highly significant disparity from the comparison pool.⁷²

by the *Loyd* court may explain its willingness, as noted above, to find the inexorable zero to be so immediately suspect.

⁶⁶ *Jordan v. Shaw Indus., Inc.*, No. 6:93CV542, 1996 WL 1061687, at *9-10 (M.D.N.C. Aug. 13, 1996).

⁶⁷ *Frazier v. Ford Motor Co.*, 176 F. Supp. 2d 719, 724 & n.1 (W.D. Ky. 2001).

⁶⁸ *Loyd v. Phillips Bros.*, 25 F.3d 518 (7th Cir. 1994).

⁶⁹ 38 F.3d 872 (7th Cir. 1994).

⁷⁰ *See id.* at 877 (“The district court found that ‘the statistical probability using standard deviation analysis of no black hires during the period 1979 through 1985 was infinitesimal.’” (citation omitted)).

⁷¹ 183 F.3d 586 (7th Cir. 1999).

⁷² *See id.* at 592 (“Justice O'Connor remarked in a concurring opinion [in *Johnson*] that, when such large numbers are involved, the ‘inexorable zero’ is all the justification needed for some kind of response. Zero of 238 is exceedingly improbable, if chance alone is an explanatory variable. When the pool is 5% female (as it was in *Johnson*), 0 for 238 will occur by chance once per 200,000 employers.” (citations omitted)).

III. AN INTERLUDE ON INEXORABILITY

"[N]othing is as emphatic as zero" Zero is not just another number⁷³

With a little imagination, one can take the courts' meditations on the inexorability of zero and set them to the music of mathematics.⁷⁴ Lest it seem that only arguments for displacing the inexorable zero inference with disparity analysis can be rigorously articulated, this Part sounds in counterpoint, showing how one might express in similarly formal phrasing the dominant, intuitive view among the circuit courts that zero or near-zero proportions of women or minorities can be a meaningful diagnostic in employment discrimination inquiries.

The intuition relies on the fact that zero is the lowest number or proportion of women or minorities that an employer can have.⁷⁵ A court that views employment discrimination law as a means for society to root out employment practices based on prejudice (whether of workers, of customers, or of employers themselves) might rationally infer that the employers with the most egregious practices would be among those near this lower bound. The rationality of such an inference can be supported either by simple assumptions about how employers hire or by standard economic models of discrimination in labor markets.

To riff, more formally: Suppose that a group of employers varies in how much each allows prejudice to influence its hiring decisions and that the employers' hiring processes map this distribution of the employers' allowances for prejudice onto a distribution of the number of women or minorities hired by the employers. If the mapping roughly preserved the ordering of employers in the original distribution, then the region of the resulting distribution near zero would be where a court could expect to find the employers whose hiring was most influenced by prejudice. Under some sensible assumptions about the hiring

⁷³ *Barner v. City of Harvey*, No. 95 C 3316, 1998 WL 664951, at *50 (N.D. Ill. Sept. 18, 1998) (citation omitted) (quoting *United States v. Hinds County School Board*, 417 F.2d 852, 858 (5th Cir. 1969)) (holding that the inexorable zero of nonblacks among laid-off police officers "speaks volumes and clearly supports an inference of discrimination").

⁷⁴ Of the various unique mathematical properties of the number zero, for example, *Teamsters* itself suggests one as especially relevant by using the phrase "inexorable zero" to override "fine-tuning of the statistics": Zero is zero percent of any non-zero number. That which we call a zero by any other denominator would still be zero.

For a mathematician's musings on the marvels of the number zero, see ROBERT KAPLAN, *THE NOTHING THAT IS: A NATURAL HISTORY OF ZERO* 116–43 (1999). Cf. *My Hero, Zero*, on BEST OF SCHOOLHOUSE ROCK (Rhino Records 1998) (extolling in song the special qualities of the number zero).

⁷⁵ Prejudiced firing of employees, however, can be interpreted as hiring a negative number. See, e.g., *Barner*, 1998 WL 664951, at *51.

process, moreover, the employers who end up hiring zero women or minorities would be in theory more likely than not to have acted on some positive degree of prejudice.

This type of sorting among employers is a familiar result in standard economic models of discrimination in labor markets, whether these models follow the earlier theoretical approach of assuming discriminatory preferences among some firms' employees or customers,⁷⁶ or whether the models involve such other sources of bias as imperfect information and stereotype.⁷⁷ Such deterministic sorting also captures the intuitions of some courts, such as the Fifth Circuit in *Capaci*, noting that firms not willing to hire even a few women or minority employees can be expected to end up with nearly none or none at all,⁷⁸ and the Seventh Circuit in *Loyd*, asserting that the persistence of a zero may indicate the intent to maintain it.⁷⁹

One objection to this line of reasoning is that employers not acting on prejudice may also end up being mapped to zero or near-zero; for example, if there are too few qualified women or minorities available relative to the number of firms, there is no guarantee that any given inexorable zero firm actually acted on prejudice. Proponents of standard deviation analysis might further argue that its very purpose is to see how frequently, on average, a hypothetical randomly hiring employer would end up at zero along with the discriminators.

But an analogous objection applies to standard deviation analysis, or to any other potentially overinclusive source of inference — that is to say, all of them, even confessions. In this context, worries about overinclusiveness would be weighty indeed if inexorable zero evidence (or, for that matter, standard deviation analysis) led directly to liability. But it does not. Rather, it shifts the presumption, leaving the employer to defend its decisions as nondiscriminatory. Normatively assessing

⁷⁶ See, e.g., GARY BECKER, *THE ECONOMICS OF DISCRIMINATION* (2d ed. 1971); cf. Kenneth Arrow, *The Theory of Discrimination*, in *DISCRIMINATION IN LABOR MARKETS* (Orley Ashenfelter & Albert Rees eds., 1973). Labor economists have devoted enormous attention to the theory and measurement of employment discrimination in the past half-century. For a recent survey of dozens of leading papers, including clear presentations of key theoretical models, see Joseph G. Altonji & Rebecca M. Blank, *Race and Gender in the Labor Market*, in *3C HANDBOOK OF LABOR ECONOMICS* 3143 (Orley Ashenfelter & David Card eds., 1999).

⁷⁷ See, e.g., CLAUDIA GOLDIN, *A POLLUTION THEORY OF DISCRIMINATION: MALE AND FEMALE DIFFERENCES IN OCCUPATIONS AND EARNINGS* (Nat'l Bureau of Econ. Research, Working Paper No. 8985, 2002), <http://www.nber.org/papers/w8985> (demonstrating how a concern for prestige can lead to occupational segregation by gender even if male workers harbor no general distaste for associating with women).

⁷⁸ *Capaci v. Katz & Besthoff, Inc.*, 711 F.2d 647, 662 (5th Cir. 1983), *cert. denied*, 466 U.S. 927 (1984) ("Evidence of two or three acts of hiring women as manager trainees during this period might not have affected the statistical significance of the tests performed by the experts, but it would indicate at least some willingness to consider women as equals in firm management.")

⁷⁹ *Loyd v. Phillips Bros.*, 25 F.3d 518, 524 n.4 (7th Cir. 1994).

the desirability of either standard deviation analysis or the inexorable zero rule as a diagnostic tool therefore requires an empirical evaluation of the consequences of false positives and false negatives not in the final liability decision, but rather in the decision whether to shift the presumption against the employer. To be sure, there are real costs to investigating false alarms, but they are not the same as the costs of fighting imaginary fires.

Some diagnostics are more useful than others, of course. That some courts may favor disparity analysis over the intuition (or economic theory) supporting the inexorable zero inference should not be surprising. Although *Hazelwood* required neither standard deviation analysis nor the level of statistical significance suggested in *Castaneda*, courts now commonly rely on these two concepts when evaluating employment disparities. These concepts have shortcomings, however, that should make an unreflective application of them "suspect to a social scientist."⁸⁰ Judge Richard Posner of the Seventh Circuit, for example, has cautioned against rigid adherence to any given standard for statistical significance, noting the many factors that affect the significance level and the arbitrariness of the "five percent" convention.⁸¹ Moreover, the assumptions underpinning standard deviation analyses are typically unrealistic.⁸²

More to the point, standard deviation analysis does not measure the likelihood that illegal behavior occurred. Finding that an observed hiring disparity is "not statistically significant" means *not* that the actual hiring process was unbiased or that "chance" alone caused the disparity, but rather that a hypothetical random lottery could be expected to generate a disparity at least as large. More precisely, the

⁸⁰ Cf. *Castaneda v. Partida*, 430 U.S. 482, 496 n.17 (1977) ("As a general rule for such large samples, if the difference between the expected value and the observed number is greater than two or three standard deviations, then the hypothesis that the jury drawing was random would be suspect to a social scientist.").

⁸¹ *Kadas v. MCI Systemhouse Corp.*, 255 F.3d 359, 362 (7th Cir. 2001) ("Some cases suggest that statistical evidence is not admissible to show discrimination unless it is significant at the conventional 5 percent significance level Other cases — including our own — reject the suggestion. The 5 percent test is arbitrary; it is influenced by the fact that scholarly publishers have limited space and don't want to clog up their journals and books with statistical findings that have a substantial probability of being a product of chance rather than of some interesting underlying relation between the variables of concern. Litigation generally is not fussy about evidence; much eyewitness and other nonquantitative evidence is subject to significant possibility of error, yet no effort is made to exclude it if it doesn't satisfy some counterpart to the 5 percent significance test. A lower significance level may show that the correlation is spurious, but may also be a result of 'noise' in the data or collinearity Conversely, a high significance level may be a misleading artifact of the study's design"). See generally D.H. Kaye, *Is Proof of Statistical Significance Relevant?*, 61 WASH. L. REV. 1333 (1986) (explaining the use of statistical significance testing in litigation).

⁸² See Paul Meier et al., *What Happened in Hazelwood: Statistics, Employment Discrimination, and the 80% Rule*, 1984 AM. B. FOUND. RES. J. 139, 152–58.

method measures how frequently a hiring disparity at least as large as the one observed should be expected to occur in repeated random hiring lotteries from a well-defined labor pool. What is directly relevant for assessing liability, however, is something quite different: the probability that a discriminatory hiring process was in fact the cause of the observed results.

These two probabilities differ in both their mathematical and practical meanings,⁸³ and the tendency to confuse them is known as the “transposition fallacy.”⁸⁴ But because directly calculating the likelihood that a discriminatory process was the cause of the observed disparity is impossible (without imposing strong numerical assumptions — picking numbers out of the air — or calibrating subjective parameters⁸⁵), social scientists have found standard deviation analysis useful as a second-best source of inference. Its use relies on the following interpretive presumption: if one cannot reject with some confidence the hypothesis that randomness could have generated the observed hiring disparity, then that observation should not be taken as evidence of any alternative hypothesis. Extending this reasoning to its limits would lead to an absurdity — one could render irrelevant any data on outcomes simply by assuming an arbitrary model that fails to rule out another possible cause of those outcomes. Nevertheless, inferences from hypothesis testing are widely viewed as reasonable and persuasive; the

⁸³ In technical terms, the *Hazelwood* method, known to statisticians as “hypothesis testing,” generates the conditional probability of a range of outcomes X , given a “null hypothesis” of a random process N , denoted $P(X|N)$. But that is different from the conditional probability that a discriminatory hiring practice was actually at work, given the observed outcome, and even if an illegal practice were equated with any process other than a random lottery, the desired measure would be $(1 - P(N|X))$. In general, $P(X|N)$ and $P(N|X)$ are not the same. A classic exposition of the difference is recounted in *What Happened in Hazelwood* (which attributes the example to John Maynard Keynes):

Suppose the Archbishop of Canterbury were playing in a poker game: the probability that the Archbishop would deal himself a straight flush, given honest play on his part, is *not* the same as the probability of honest play on his part given that the prelate dealt himself a straight flush. (The first conditional probability may be calculated to be 40 in 2,598,960 and is quite small; the second conditional probability would be, at least for most Anglicans, much larger, indeed quite close to 1.)

Id. at 149.

⁸⁴ See David H. Kaye & David A. Freedman, *Reference Guide on Statistics*, in FEDERAL JUDICIAL CENTER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 83, 131 n.167 (2d ed. 2000).

⁸⁵ See *id.* at 131–33. For a lively exchange regarding the difficulties of using subjective parameters and the Bayes Theorem to calibrate the actual likelihood of guilt, see Michael O. Finkelstein & William B. Fairley, *A Bayesian Approach to Identification Evidence*, 83 HARV. L. REV. 489 (1970); followed by Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329, 1344–78 (1971); Michael O. Finkelstein & William B. Fairley, *A Comment on “Trial by Mathematics”*, 84 HARV. L. REV. 1801 (1971); and Laurence H. Tribe, *A Further Critique of Mathematical Proof*, 84 HARV. L. REV. 1810 (1971).

very utility of statistical inference to social science rests on an acceptance of this method of inductive reasoning.

The point of this discussion is simply to emphasize that the justification for using standard deviation analysis in legal determinations resides not in the rigor of deductive mathematical logic, but rather in the legal system's willingness to adopt some interpretive assumptions underlying statistical inference that have been accepted by social scientists. If courts choose to displace the inexorable zero inference with standard deviation analysis, their decision should be based on normative-empirical assessments of consequences of false-positive and false-negative inferences, not on the perception that the inexorable zero inference cannot be supported by analytical reasoning or that standard deviation analysis is logically compelled.

Although such a normative-empirical assessment would exceed the scope of this Note, the parallels between the inexorable zero inference and standard deviation analysis in this regard are worth reiterating: Neither produces the actual probability that any given employer acted with prejudice. Both can only serve as a proxy for motive, using stylized statistical models — one implicitly formalizing an intuitive notion about employer sorting (the inexorable zero inference) and the other explicitly formalizing an interpretive convention about ruling out the role of chance (standard deviation analysis). Neither is ideal, but both are logically defensible and potentially complementary diagnostics.

The intuition formally articulated in this Part, that inexorable zero evidence may under some circumstances be a useful trigger for further inquiry into employment decisions, also finds some doctrinal support (still largely unrecognized by the courts) in the framework that *Teamsters* established for granting relief to those qualified women or minority workers who can show that they were deterred from applying for a job by the employer's reputation for hiring no women or minorities. The next Part traces the development of that doctrine and its relationship to the inexorable zero inference.

IV. DETERRED APPLICANTS AND THE INEXORABLE ZERO

As the Court noted in the portion of the *Teamsters* opinion in which it first established the "deterred applicant" doctrine, "the racial or ethnic composition of that part of his work force from which [the employer] has discriminatorily excluded members of minority groups" can be a deterrent equal to a sign announcing a policy of "Whites Only."⁸⁶ This Part explores the nexus, suggested by the Court's language, between the inexorable zero rule and the deterred-applicant doctrine. It introduces the latter and examines a recent Eleventh Circuit case that

⁸⁶ Int'l Bhd. of Teamsters v. United States, 431 U.S. 324, 365 (1977).

granted relief to women deterred by a famous Miami Beach restaurant's reputation for hiring no female servers. Based on the fact pattern of that case, this Part suggests that the "glaring absence" intuition for using the inexorable zero inference may have amplified relevance in this deterred-applicant branch of liability.

The Supreme Court has established that the potential for an employer's discriminatory practices to deter qualified applicants may both give rise to Title VII liability and cast doubt on the validity of statistical evidence. *Teamsters* itself created the deterred-applicant, or "futile gesture," branch of Title VII liability, explaining that "[w]hen a person's desire for a job is not translated into a formal application solely because of his unwillingness to engage in a futile gesture[,] he is as much a victim of discrimination as is he who goes through the motions of submitting an application."⁸⁷ The showing of systemic disparate treatment in *Teamsters* created a presumption that some nonapplicants were deterred,⁸⁸ but to win relief, each nonapplicant had to meet the "not always easy burden of proving that he would have applied for the job had it not been for those [discriminatory] practices."⁸⁹ Shortly after the *Teamsters* decision, the Court applied the deterred-applicant theory in *Dothard v. Rawlinson*,⁹⁰ a sex discrimination case concerning height and weight requirements for applicants seeking jobs as prison guards. Also citing *Teamsters*, *Wards Cove Packing Co. v. Atonio*⁹¹ confirmed the implications of applicant discouragement for statistical comparisons between the applicant and employee pools.⁹²

In its recent deterred-applicant case *EEOC v. Joe's Stone Crab, Inc.*,⁹³ the Eleventh Circuit held that an inexorable zero itself can be the very signal that deters applicants — just as the *Teamsters* Court concluded that it might. Joe's Stone Crab was a "landmark Miami Beach seafood restaurant"⁹⁴ that sought to "emulate Old World tradi-

⁸⁷ *Id.* at 365–66.

⁸⁸ *See id.* at 369.

⁸⁹ *Id.* at 368.

⁹⁰ 433 U.S. 321, 330 (1977) ("The application process itself might not adequately reflect the actual potential applicant pool, since otherwise qualified people might be discouraged from applying because of a self-recognized inability to meet the very standards being challenged as being discriminatory. A potential applicant could easily determine her height and weight and conclude that to make an application would be futile." (citing *Teamsters*, 431 U.S. at 365–67)).

⁹¹ 490 U.S. 642 (1989).

⁹² *Id.* at 651 n.7 ("Obviously, the analysis [of the relevant labor pool] would be different if it were found that the dearth of qualified nonwhite applicants was due to practices on [the employer's] part which — expressly or implicitly — deterred minority group members from applying for noncannery positions.").

⁹³ 296 F.3d 1265, 1275 (11th Cir. 2002), *cert. denied*, 123 S. Ct. 2606 (2003) (finding Title VII liability for deterring applicants through perpetuation of a reputation for hiring only men); *see also* *EEOC v. Joe's Stone Crab*, 220 F.3d 1263 (11th Cir. 2000).

⁹⁴ *Joe's Stone Crab*, 220 F.3d at 1267.

tions by creating an ambience in which tuxedo-clad men served its distinctive menu."⁹⁵ Between 1986 and 1990, "108 new male food servers were hired while *zero* women were hired."⁹⁶ Considering the case for a second time in 2002, the circuit court held in favor of two women who, despite not having applied to be servers in the relevant time period, had nonetheless successfully argued that the discriminatory reputation of the employer deterred them from applying.

On a prior appeal, the circuit court had noted that "over time this male-only preference [in hiring at Joe's] became common knowledge, and that eventually most potential, qualified, female applicants self-selected out of Joe's hiring process precisely because of its reputation for intentional sex discrimination."⁹⁷ Although the first decision had cautioned that, for liability purposes, the employer's discriminatory reputation needed to be caused or perpetuated by the employer itself,⁹⁸ the second decision construed that requirement generously, holding that the owners' silence on the issue constituted the "implicit consent that caused the reputation that Joe's discriminated against women."⁹⁹ Thus, according to the second *Joe's Stone Crab* opinion, if an employer's discriminatory "standard operating procedure"¹⁰⁰ is widely known, then acquiescing to that reputation constitutes a violation of Title VII.

Under the *Joe's Stone Crab* analysis, even a court skeptical of the uniqueness of zero would doctrinally be required to consider that an individual might see zero as especially deterrent. Specifically, potential job applicants may very well view as a "glaring absence" — and a deterrent — what a skeptical court might view as a "mere absence" of women or minorities on the job. Notably, to the extent that a court may find the inexorable zero inference useful in a deterred-applicant inquiry, standard deviation analysis would not be an obviously preferable substitute. The reason is familiar from Part III: A potential applicant would not be primarily interested in the probability that a random process would generate what she observes to be an inexorable zero. Rather, she would be concerned with the probability, given the observed hiring outcome, that this particular employer excludes women or minorities. In theory, these two probabilities are mathematically related by the Bayes Theorem, but the theorem is rarely ap-

⁹⁵ *Id.* at 1270 (quoting the district court's factual findings) (internal quotation marks omitted).

⁹⁶ *Id.* at 1271.

⁹⁷ *Id.* at 1282–83.

⁹⁸ *Id.* at 1281 ("While a company may be held liable for a discriminatory reputation if there is evidence it caused or perpetuated that reputation through some *intentional* affirmative act, we know of no federal circuit that has found an employer liable under Title VII on the basis of a reputation for discrimination it did not cause." (citation omitted)).

⁹⁹ *EEOC v. Joe's Stone Crab*, 296 F.3d 1265, 1275 (11th Cir. 2002).

¹⁰⁰ *Int'l Bhd. of Teamsters v. United States*, 431 U.S. 324, 336 (1977).

plied or even mentioned by the courts, probably because it is highly impracticable; to use the theorem would require assigning values to highly subjective parameters, such as the applicant's prior beliefs. Nevertheless, the theorem underscores the technical point that the level of disparity that would deter a potential applicant is generally not identical to the level that a court would demand for establishing a prima facie inference of discrimination based on disparity analysis.¹⁰¹ The intuitive point is that because job applicants are not statisticians, they generally do not themselves use the statistical significance of a disparity to evaluate whether it would be futile to apply.

V. CONCLUSION

In examining how federal courts have invoked the "inexorable zero," this Note has sought not to bury their intuitions but to rephrase them. By expressing these intuitions in more formal terms, this Note dispels the notion that the inexorable zero inference is theoretically ungrounded. Thus, the normative question splitting the circuits — whether the inexorable zero inference should be discarded, given the availability of social science methods of statistical inference — is primarily (and properly) a matter of the consequences of false positives and false negatives that might arise from using such diagnostic tools to draw prima facie inferences.¹⁰² Whether the inexorable zero inference

¹⁰¹ Suppose, for example, that a potential applicant would be deterred from applying if she assessed that the chances were more than 50–50 that a given employer was a discriminator. (This would correspond to the "more probable than not" or preponderance standard for civil liability, if the court rather than the individual were assessing the probability that an employer were a discriminator.) Even supposing that this person had the data and the motivation to perform a standard deviation analysis, applying the Bayes Theorem shows that she would rationally be deterred by a statistical disparity that was not statistically significant at the 5% level. For example, under the assumption that she initially believed there was only a 10% chance that the hiring process excluded women, the Bayes Theorem shows that she would be deterred by a statistical disparity significant at the 11% level, short of the conventional 5% level needed under the disparity analysis to trigger further inquiry. More realistically, if the complete or near absence of women on the job were particularly salient to this observer, then disparity analysis would be even more inapt.

¹⁰² A concern for accuracy in adjudication is important for self-evident as well as formally articulable reasons. In one theoretical model, for example, the effort directed toward increasing accuracy is a substitute for that directed toward enforcement; moreover, the costlier the legal sanctions are for society, the greater are the benefits of increased accuracy. See Louis Kaplow & Steven Shavell, *Accuracy in the Determination of Liability*, 37 J.L. & ECON. 1, 10–11 (1994).

Accuracy, of course, may be affected by responses to the rules themselves: In theory, any clear legal rule might induce potentially liable actors to aim for the safe side of the bright line, but only just. One might imagine that some employers who were aware of the inexorable zero rule would hire a token number of women or minorities, rather than none at all. Setting aside the broader implications of such hiring decisions, one might argue that this ability of employers to change their behaviors would tend to undermine the inexorable zero as an indicator of employer motives — and likewise for disparity analysis with a rigid statistical significance threshold.

But theoretical speculation alone will generally be indeterminate. The supposed behavioral response, after all, can in theory make the inexorable zero inference more precise: in employer-

can be a desirable complement to disparity analysis, in particular, depends on cases in which the two approaches yield different outcomes. Aside from the comparison group chosen for disparity analysis, two considerations are most practically significant: Standard deviation analysis is relatively insensitive in smaller samples (entailing greater consequences to allowing the inexorable zero inference in such cases). And naturally, the significance level that a court requires in disparity analysis affects how much that approach overlaps with the inexorable zero inference.¹⁰³

Finally, for the purposes of normatively and empirically evaluating the inexorable zero inference, a reminder of the doctrinal backdrop is in order: the question dividing the circuits is not whether any diagnostic tool perfectly achieves the general aim of rooting out discriminatory motivations, or whether the optimal rule involves an "inexorable *n*." The question for the courts is instead whether, for some class of cases, taking account of the inexorable zero would be better than nothing at all.

sorting scenarios, such as those predicted by the economic models mentioned in Part III, such a response by employers may cause the inexorable zero inference to be better targeted, because those employers who hire an inexorable zero of women and minorities despite the rule would likely be acting on a greater prejudice than those responding to the rule.

As it turns out, the supposed bright line is rather blurred, thanks to the discretion of the courts in allowing the prima facie inference and to the inclusion of near-zero proportions along with the number zero — to some degree, token numbers are already accounted for by the rule.

¹⁰³ Simply allowing a looser statistical significance threshold, however, could not replicate the function of the inexorable zero inference. Moreover, given the disjunction between what standard deviation analysis calculates (the *p*-value) and the actual likelihood of outlawed behavior — they are different not in degree, but in kind — changing the significance level in either direction would not be an effective method of enhancing accuracy generally.