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Valuing the risk of workplace sexual harassment

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Published online: 11 October 2018

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Abstract

Using data on sexual harassment charges filed with the Equal Employment Opportunity Commission, I calculate the risk of sexual harassment by gender, industry, and age and establish that white females, but not nonwhite females, receive a compensating wage differential for exposure to a higher risk of sexual harassment. I use this risk premium to calculate the value of statistical harassment (VSH) in a manner analogous to the calculation of the value of statistical life (VSL). The VSH is around \$7.6 million, about three-quarters of the size of the most-commonly cited levels of the VSL, and far above the maximum damages award for sexual harassment available under federal law. Boosting the maximum damages award to equal the VSH would create the appropriate economic incentives for organizations to deter sexual harassment.

Keywords Sexual harassment · Job risks · Compensating differentials · Gender discrimination · Value of statistical life · Deterrence · #MeToo

JEL Classifications J3 · J7 · K4

1 Introduction

A vast literature documents that workers facing risks of workplace fatality or injury are paid a premium for exposure to these risks (e.g., Viscusi and Aldy 2003; Viscusi 2018). But there is little evidence that workers are paid a premium for exposure to other workplace hazards or undesirable working conditions. In this paper, I establish that white women who are at risk of sexual harassment receive a premium for exposure to this risk. Nonwhite women do not receive this premium. The disparity by race is consistent with a similar lack of compensation for nonwhites at risk of fatality or injury (Leeth and Ruser 2003; Viscusi 2003). Based on the estimated premium for the risk of

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sexual harassment, I calculate a measure analogous to the value of a statistical life (VSL), which I term the “value of statistical harassment,” or VSH. The VSL monetizes the risk of fatality and is used by government agencies to set regulatory standards for safety. As with the VSL, the VSH can be used to monetize the societal harm caused by workplace sexual harassment and has applicability to policy in setting regulatory standards and damages awards to incentivize a reduction in the risk of workplace sexual harassment.

Workplace sexual harassment is illegal under Title VII of the Civil Rights Act of 1964. Nonetheless, survey evidence documents that it is common. The #MeToo movement launched in fall 2017 has graphically revealed decades-long practices of unwelcome and often criminal sexual acts perpetrated by men at the top of their industries. Although the #MeToo movement has raised awareness of sexual harassment and has been costly to some individual harassers and firms, the bulk of the costs is borne by victims in terms of lower job satisfaction, reduced productivity, and higher turnover. There is currently little financial incentive for firms to cease sexual harassment as both the probability of a successful lawsuit and the federal cap on damages awards are low. In contrast, attempts to decrease sexual harassment increase the costs to firms of monitoring workplace behavior and may involve sanctioning or removing from their positions some of the most prominent employees.¹

The potential role of appropriate financial incentives in deterring undesirable behaviors is well-established. The existence of penalties alone is not sufficient to deter undesirable risky behaviors; the deterrence effect also depends on the magnitude of the penalties. For example, fairly low penalties often deter excessive speeding (DeAngelo and Charness 2012). In contrast, low penalties do not have an appreciable effect in deterring domestic violence (Sloan et al. 2013). My analysis demonstrates that the current federal cap on damages awards is far too low for efficient deterrence.

To establish the level of damages awards necessary for efficient deterrence, I use data on sexual harassment claims filed with the Equal Employment Opportunity Commission (EEOC), from which I calculate the rate of sexual harassment claims by industry, age, and gender. Sexual harassment is well-known to be severely underreported; reported claims will account for the most severe cases of sexual harassment and are used as a proxy for the risk of sexual harassment faced by workers in their specific industry, age group, and gender. This rate of claims provides the first comprehensive information on the incidence of sexual harassment by industry and allows making inter-industry comparisons that are otherwise not feasible.

By including the risk of sexual harassment claims in wage equations, I estimate the sexual harassment risk–wage tradeoff. I then use the estimated compensating differential for the risk of sexual harassment to calculate the value of statistical harassment in a manner parallel to the calculation of the value of statistical life. This value is about \$7.6 million (in \$2017) per sexual harassment claim filed with the EEOC, far above the current maximum damages award under Title VII of \$300,000 for the largest firms. I conclude with a discussion of the policy implications for establishing incentives for efficient deterrence to reduce the prevalence of workplace sexual harassment.

¹ A large number of prominent individuals have been identified in the media. A few visible examples of men who have been forced from their positions for sexual harassment since mid-2017 include Roger Ailes, Matt Lauer, Bill O’Reilly, Harvey Weinstein, and Steve Wynn.

2 Background on sexual harassment law

I calculate the risk of sexual harassment by drawing on charges filed with the EEOC that I obtained through a Freedom of Information Act request. In contrast to risk of workplace fatality, which is calculated by drawing on legally-mandated employer reports of workplace fatalities, sexual harassment experiences are self-reported, if reported at all, and reporting is not legally mandatory. To provide information about what forms of sexual harassment become reported to the EEOC and are used in my calculation of the risk of sexual harassment, I begin in this section with background on the legal framework to indicate what behaviors are considered sexual harassment under employment law and the procedure by which charges of sexual harassment are reported to the EEOC.

Title VII of the Civil Rights Act of 1964 prohibits employers, labor unions, and employment agencies from discriminating against employees or applicants “with respect to compensation, terms, conditions or privileges of employment because of race, color, religion, sex or national origin.” Sexual harassment is neither defined nor specifically covered under Title VII. The interpretation of sexual harassment as a form of sex discrimination that is prohibited under Title VII developed over time as a series of cases made their way through the courts.²

The EEOC characterizes sexual harassment as “unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature.”³ Offensive remarks about a person’s sex, such as offensive comments about women in general, are also considered sexual harassment. According to EEOC guidance, “simple teasing” and “offhand comments” will generally not be illegal.⁴ Instead, harassment becomes illegal when the behavior is so frequent or severe that it creates a hostile work environment or results in an adverse employment decision such as firing or demotion.

The 1986 Supreme Court decision *Meritor Savings Bank v. Vinson* established the legitimacy of sexual harassment as a form of sex discrimination under Title VII. Plaintiffs could establish a violation of Title VII for conduct that discriminated on the basis of sex, created a hostile or abusive environment, and was severe or pervasive.

Determining when an employer was liable for the sexually harassing actions of their employees came about through a pair of 1998 Supreme Court decisions, *Faragher v. City of Boca Raton* and *Burlington Industries, Inc. v. Ellerth*. These cases held that it is a clear violation of Title VII for employers (or their supervisors as agents of the employer) to demand that a woman provide sexual favors in order to retain or obtain employment benefits, and in these cases the employer is strictly liable.

Employers have a possible defense against liability if (i) the employer takes reasonable care to prevent harassment (such as disseminating a policy against harassment and establishing reporting procedures), (ii) the employer promptly corrects any sexually harassing behavior, and (iii) the employee unreasonably fails to take advantage of the employer’s preventive or corrective opportunities. In such cases, the employee is only entitled to relief if she takes advantage of the employer’s procedures and remedies,

² See, e.g., Crouch (2001) and Siegel (2003) for valuable overviews of the evolution of the interpretation of sexual harassment as a form of sex discrimination.

³ “Sexual Harassment,” *U.S. Equal Employment Opportunity Commission*, last accessed February 19, 2018, https://www.eeoc.gov/laws/types/sexual_harassment.cfm [https://perma.cc/Q669-GQWZ].

⁴ “Prohibited Employment Policies/Practices,” *U.S. Equal Employment Opportunity Commission*, last accessed September 5, 2018, <https://www.eeoc.gov/laws/practices/index.cfm> [https://perma.cc/P9EH-MVEP].

which generally means that the employee must report sexual harassing behavior to their employer.⁵ The law is structured in order to create incentives for employers to prevent sexual harassment by maintaining correction policies while also giving victims incentive to follow their employer's internal procedures.

In order to file a lawsuit after internal procedures have been exhausted, the employee must first file a charge with the EEOC or with the corresponding state or local Fair Employment Practices Agency (FEPA).⁶ After the charge is filed, the EEOC will investigate and attempt to resolve the claim without litigation. If the EEOC is not able to successfully resolve the case, the agency may bring suit in federal court, or, more commonly, issue a "right to sue" notice to the charging party.

Until the Civil Rights Act of 1991 was passed, Title VII claims were not eligible for jury trial, and the only available remedies for successful plaintiffs were equitable relief (e.g., reinstatement in job, back pay) and an injunction against the employer to stop the illegal behavior. The 1991 amendments to the Act resulted in a number of changes. Plaintiffs in Title VII lawsuits are now eligible for jury trial. Title VII allows for the award of both compensatory and punitive damages. However, the total damages award is capped and determined by the number of employees of the defendant firm at a maximum of \$300,000 (excluding back pay) if the employer has 500 or more employees.⁷ Title VII also provides for the losing party to pay attorneys' fees. Under the 1991 amendments to the Act, in addition to back pay, compensatory damages include "future pecuniary losses, emotional pain, suffering, inconvenience, mental anguish, loss of enjoyment of life, and other nonpecuniary losses."

The 2003 Supreme Court decision *State Farm Mutual Automobile Insurance Co. v. Campbell* usually limits punitive damages to less than 10 times compensatory damages. Subject to this punitive-to-compensatory damages ratio constraint, the current limit on the sum of compensatory and punitive damages in employment discrimination cases of \$300,000 for the largest firms implies that any individual with compensatory damages of more than \$27,273 is eligible for less than the maximum punitive damages award that would be available without the Title VII caps.

There are steep barriers to launching a successful lawsuit against an employer for sexual harassment. Most employers have policies prohibiting sexual harassment and established reporting procedures, and they typically provide anti-harassment training of some kind.⁸ Because claimants usually need to report the harassing behavior to their

⁵ An exception to the requirement to report sexual harassment to the employer would arise if the employee is being harassed by a supervisor, and there is no one else to whom to report the harassment.

⁶ The federal government is also covered under federal anti-discrimination laws, but the process for federal sector complaints is different than for complaints involving the private sector, state and local governments, and unions. For federal complaints, the individual is required to make a complaint with the federal agency alleged to have engaged in the discriminatory practice. The agency is responsible for investigating such complaints and makes a determination about whether discrimination has occurred. Individuals who disagree with the agency's conclusion can then appeal to the EEOC. The EEOC's determination of discrimination, if found, cannot be appealed.

⁷ The maximum total damages award for employers with 15 to 100 employees is \$50,000; for those with 101 to 200 employees, \$100,000; for 201 to 500 employees, \$200,000. These limits have not been raised since 1991. The maximum damages award for cases filed in state courts may differ by state.

⁸ EEOC guidelines and the Supreme Court decisions in *Faragher* and *Ellerth* provide incentives for employers to have anti-harassment policies and reporting procedures and to provide training. There is, however, little evidence that training as currently provided has been effective (U.S. Equal Employment Opportunity Commission 2016).

employer before filing a charge with the EEOC, claimants risk damage to their reputation within their current employment. They also must be able to credibly argue that the behavior was unwelcome—which can be difficult in situations such as romantic relationships that go sour and one party is in the position to retaliate. The already substantial barriers grew even larger with the 2013 Supreme Court decision *Vance v. Ball State University*, which narrowed the definition of supervisor to those with hiring and firing power. Under this narrow definition, an employee who sets a worker's schedule but technically could not fire the worker would not be considered as a supervisor, thereby reducing the chance that an employer would be found liable for the actions of the harassing employee. In sum, despite the threat of discrimination lawsuits, the persistence of workplace sexual harassment indicates that the expected value of damages awards from plaintiff success at trial does not appear to provide adequate incentive to firms for deterrence.

Because I calculate the risk of sexual harassment in a manner analogous to the calculation of the risk of workplace fatality, it is worthwhile to compare the information used for these two calculations. All workplace fatalities must be reported to the Occupational Safety and Health Administration and are recorded in the Census of Fatal Occupational Injuries. It would be close to impossible to conceal workplace fatalities arising from traumatic injuries, and potential and current employees can take that information into account both in accepting a job and in considering whether the corresponding pay provides adequate compensation. By contrast, not only is sexual harassment substantially underreported, with estimates indicating that more than 90% of victims do not make a formal report (U.S. Merit Systems Protection Board 1995), but even among those cases that result in reports, the widespread use of mandatory arbitration and nondisclosure agreements makes it nearly impossible to ascertain the true risk of workplace sexual harassment at any firm. However, because reporting to the EEOC or the corresponding FEPA is required before a claimant can pursue a lawsuit, the measure of sexual harassment risk used in the estimates is not subject to measurement error and fully captures the risk of lawsuits faced by employers. The analogy to fatality risk would be workplaces in which there are numerous nonfatal injuries that accompany a risky environment but that rarely result in deaths. These nonfatal injuries do not enter into the fatality risk measure used in earnings regressions to estimate the VSL, but because they are likely correlated with fatality risk, the VSL provides the societal value of actual workplace deaths as well as nonfatal workplace risks that are correlated with fatalities. Similarly, the value of statistical harassment estimated in this paper provides the societal value of sexually harassing events that may lead to lawsuits as well as other sexually harassing behaviors that are correlated with those that lead to lawsuits.

Nonetheless, underreporting of sexual harassment has two immediate implications related to job turnover and to the estimate of the VSH. First, because of underreporting, workers will be uncertain about the true risk of sexual harassment at a particular job. Viscusi (1979) shows that uncertainty about fatal and nonfatal job risks leads to higher turnover as workers learn about the true risk. As with other job risks, underreporting of sexual harassment is likewise expected to lead to higher employee turnover. It is possible that the estimate of the VSH would be biased by failure to account for endogenous turnover. However, Kniesner et al. (2014) establish that the estimated VSL derived from job changes is consistent with other market evidence on the VSL,

suggesting that the VSH estimated here may likewise be similar if based on job changes. Second, as with the calculation of the VSL, if the measured sexual harassment claim risk rate is lower than the overall rate of sexual harassment, then the calculated value of sexual harassment will be larger than if it were based on a more complete measure of risk of sexual harassment. Both factors argue for policies that encourage reporting as a means to reduce inefficient turnover and to provide efficient incentives for deterrence.

3 Prevalence of sexual harassment

Although recent media coverage may seem to suggest that sexual harassment is overwhelmingly common, reliable data on the prevalence of sexual harassment—and especially data on harassment that would meet the legal definition—is sparse. Most of our knowledge of the prevalence of sexual harassment is from surveys. Because there is a wide range of behaviors that are considered sexual harassment, there are various definitions used in research and in surveys, and different methods yield considerable variation in prevalence.⁹ For the most part, survey questions do not directly correspond to the legal definition of sexual harassment.¹⁰

There are two primary methods used in surveys to elicit experiences of sexual harassment. In the direct query approach, respondents are asked to report whether they have been sexually harassed according to their own definition of harassment. This is the type of question used, for example, in the General Social Survey.¹¹

The second method is a behavioral experiences approach in which respondents are asked to indicate whether they had experienced any of the behaviors on a provided list, such as sexual teasing, looks, or gestures. This approach is based on the “sexual experiences questionnaire” (SEQ) developed by Louise Fitzgerald and colleagues (e.g., Fitzgerald et al. 1988; Fitzgerald et al. 1995). Incidence rates based on a behavioral experiences survey are higher than when based on direct query. A meta-analysis using 55 probability samples from the United States finds that the incidence rate is about double when based on the behavioral survey rather than on direct query,

⁹ See Hersch (2015) for an overview of the methodology used in surveys and for international evidence on the prevalence of sexual harassment.

¹⁰ A notable exception is the 2014 RAND Military Workplace Study, which was designed to focus on crimes under the Uniform Code of Military Justice and violations of equal opportunity laws and regulations, and to exclude events that do not meet the legal standards for sexual assault, sexual harassment, or gender discrimination (National Defense Research Institute 2014). The report notes that prior surveys of military personnel were designed to measure a climate of sexual misconduct instead of actual illegal behavior.

¹¹ The General Social Survey included questions on sexual harassment in 1994, 1996, 2002, 2006, 2010, and 2014. In the 1994 and 1996 survey, the question was: “Sometimes at work people find themselves the object of sexual advances, propositions, or unwanted sexual discussions from co-workers or supervisors. The advances sometimes involve physical contact and sometimes just involve sexual conversations. Has this ever happened to you?” Starting in 2002, respondents were asked: “In the last 12 months, were you sexually harassed by anyone while you were on the job?” Note that the 1994 question defined sexual harassment but did not give a time limit. In contrast, the question starting in 2002 did not define sexual harassment but limited the time period for reporting to 12 months. For reference, in the 1996 survey, 32.5% of those responding to the question reported that they had ever been the object of sexual interactions at work. In the 2014 survey, 2.7% of those responding to this question reported that they had been sexually harassed on the job in the last 12 months. (These values are calculated using the GSS Data Explorer.)

with an incidence rate of 24% based on direct query and 58% based on behavioral experiences (Ilies et al. 2003).

Surveys also differ widely on time periods covered—requesting reports of sexual harassment from as little as 3 months to any past experience with no time limit—and differ by population surveyed. Most surveys do not sample from a nationally representative population but instead are based on specific groups, such as occupation, industry, or workplace.

Perhaps the most reliable trend evidence on sexual harassment is derived from the U.S. Merit Systems Protection Board (USMSPB) survey, “Sexual Harassment in the Federal Workplace.” This is a survey of federal employees conducted in 1980, 1987, 1994, and 2016.¹² Among other questions, these surveys asked respondents to report whether they had experienced any of the following unwanted or uninvited behaviors at work in the past 2 years: sexual teasing, jokes, remarks, questions; sexual looks or gestures; invasion of personal space by deliberate touching, leaning, cornering; pressure for dates; communication of a sexual nature by letters, calls, or sexual materials; stalking; pressure for sexual favors; and actual or attempted rape or assault.

Table 1 provides the summary of sexually harassing behaviors reported in the USMSPB surveys in 1980, 1987, 1994, and 2016. As Table 1 shows, a large share of workers, both male and female, report that they have been sexually harassed, with women far more likely than men to report that they have been sexually harassed. In 1994, the survey shows that 44% of women and 19% of men had experienced unwanted sexual attention on the job in the preceding 2 years. The values are fairly similar to the percent reporting unwanted sexual attention in the 1980 and 1987 waves of the survey. The 2016 survey shows a substantial reduction in the share of workers reporting that they had been sexually harassed in the past 2 years to 18% for women and 6% for men. The decline in the share reporting sexual harassment in the most recent USMSPB survey is not inconsistent with the current media coverage: Although sexual harassment has received unprecedented media attention that began in fall 2017, many current reports of sexual harassment and sexual assault refer to actions that occurred in earlier periods in which the USMSPB identified far higher rates of sexual harassment.

4 Calculation of the sexual harassment risk measure

A substantial economics literature examines the relation between the risk of fatality and worker wages, which in turn provides the basis for the estimates of the value of statistical life (e.g., Viscusi 2018; Viscusi and Aldy 2003). Here I develop the counterpart of such an analysis to examine the relation between the risk of sexual harassment and wages, which forms the basis of my estimates of the value of statistical harassment.

To develop my measure of the risk of sexual harassment, I obtained data from the EEOC through a Freedom of Information Act request. The data provide records of all individual charges filed with the EEOC or the corresponding state or local Fair

¹² The reports by the U.S. Merit Systems Protection Board (1995, 2017) summarize the findings of the “Sexual Harassment in the Federal Workplace” surveys.

Table 1 Prevalence of sexual harassment, U.S. Merit Systems Protection Board sexual harassment survey

	Men				Women			
	1980	1987	1994	2016	1980	1987	1994	2016
Unwelcome sexual teasing, jokes, remarks, questions	10	12	14	3	33	35	37	9
Unwelcome sexually suggestive looks or gestures	8	9	9	1	28	28	29	9
Unwelcome invasion of personal space	3	8	8	3	15	26	24	12
Pressure for dates	7	4	4	1	26	15	13	3
Unwelcome communication of a sexual nature	3	4	4	1	9	12	10	6
Stalking	NA	NA	2	1	NA	NA	7	2
Pressure for sexual favors	2	3	2	1	9	9	7	1
Actual or attempted rape or sexual assault	0.3	0.3	2	1	1	0.8	4	1
Any behavior reported	15	14	19	6	42	42	44	18

Percent experiencing unwanted behaviors in previous 2 years. For statistics for 1980, 1987, and 1994 see U.S. Merit Systems Protection Board (1995). For statistics for 2016, see U.S. Merit Systems Protection Board (2017). “NA” indicates not available. Table rows report category labels used in fall 2017 report, which differ slightly from the category labels used in the 1995 report

Employment Practices Agency. Each individual record includes information on the individual filing the claim (referred to as the charging party), the legal basis for the claim, the location and agency receiving the charge, and some information on the respondent (usually the employer, but also employment agencies and unions). An allegation consists of a statute code, a basis code, and an issue code. The legal basis information includes the statute covering the allegation (e.g., Title VII, Age Discrimination in Employment Act), the basis (e.g., sex, race, retaliation), and the issue (e.g., sexual harassment, discharge, working conditions). Most individual claims indicate more than one statute, basis, and issue.¹³ Information on the employer includes industry identifiers.¹⁴

I calculate gender-specific sexual harassment rates by industry and age group by dividing the number of individual charges that include sexual harassment as an issue within each industry and age group by the corresponding levels of employment in the same industry and age group from the Current Population Survey (CPS).¹⁵

¹³ For instance, one lawsuit filed by the EEOC involved an employee who had been harassed by her manager due to her Mexican national origin and her gender and then fired for reporting the discrimination. Such a case would be filed under Title VII, on the basis of sex, national origin, and retaliation, and with issues of sexual harassment, harassment, and discharge. See “Central Valley Auto Repair Company Sued by EEOC for Discrimination, Sexual Harassment, and Retaliation,” *U.S. Equal Employment Opportunity Commission*, press release, October 21, 2010, <https://www.eeoc.gov/eeoc/newsroom/release/10-21-10a.cfm> [<https://perma.cc/MNX4-EVTQ>].

¹⁴ Industry identifiers are created using the 6-digit North American Industry Classification System (NAICS) code.

¹⁵ This follows the methodology to construct fatality rates by industry, age, and gender in Viscusi and Hersch (2008).

Because the number of missing industry codes increased substantially after 2006,¹⁶ I use data for the five-year period from FY 2000–FY 2004 to calculate the numerators in the sexual harassment rate calculation. There are 48,741 individual claims that include sexual harassment as an issue. Of these claims, 42,065 are claims by women and 6676 are claims by men. The denominators are based on employment data from the 2004 CPS excluding self-employed workers.¹⁷ The sexual harassment rates are calculated by gender for two-digit industry (52 industries) and six age groups (15–24, 25–34, 35–44, 45–54, 55–64, and ages 65 and older).

Table 2 reports sexual harassment claim rates per 100,000 female workers by age group and two-digit industry as well as the percent female in the industry.¹⁸ Mining has a notably high rate of sexual harassment claims at 71 claims per 100,000 female workers. The mining industry is the source of a landmark case of hostile work environment sexual harassment, *Jenson v. Eveleth Taconite Co.*, which in 1991 was the first sexual harassment lawsuit to be certified as a class action. Court testimony reveals harrowing accounts of harassment that was not only sexual in nature but also physically dangerous.

Female-dominated industries such as education and social services have relatively low sexual harassment rates, at under 3 claims per 100,000 female workers. The rate of sexual harassment is greatest for those ages 25 to 44. The pattern across industries indicates that women are at a greater risk of sexual harassment in male-dominated industries, with the pairwise correlation between the overall rate for female workers and percent female equal to -0.55 ($p = 0.00$).

Figure 1 shows the pattern of sexual harassment rates by age by major industry.¹⁹ This figure shows a U-shaped pattern with the rate of sexual harassment peaking for those ages 25 to 44 and declining substantially afterward.

For the labor market sample that I analyze, the average sexual harassment rate is 8.61 per 100,000 workers for females, and 1.35 per 100,000 workers for males. Female employees are consequently 6.4 times more likely to file a sexual harassment claim. The overall rates of sexual harassment claims are in the same general range as the frequency of workplace fatality rates, of about 4 in 100,000,²⁰ which is about half the sexual harassment claim rate for female employees. Because of the small number of sexual harassment claims brought by men, the ensuing analysis focuses on sexual harassment rates based on claims brought by women, as these rates are more reliable.

¹⁶ Industry is not a required field on the EEOC claims records. Industry code is missing in about 28% of the claims prior to 2006, but jumped to 56% in 2008. Because I calculate the risk measure by industry, those claims with missing industry code are not included in the calculation of the risk of sexual harassment. As discussed in Hersch (2011), whether industry code is missing seems to be largely random.

¹⁷ Self-employed workers are excluded because they would generally not be able to claim sexual harassment against an employer.

¹⁸ Table 2 reports these statistics only for industries with at least 100 charges filed by women in the five-year period, although the rates for all two-digit industries are used in the wage equation estimation.

¹⁹ Sexual harassment rates for major industry by gender but not by age are reported in Table 1 of Hersch (2011).

²⁰ See “Census of Fatal Occupational Injuries Summary, 2016,” *U.S. Department of Labor*, press release, December 19, 2017, <https://www.bls.gov/news.release/cfoi.nf0.htm> [<https://perma.cc/U28W-XJQQ>].

Table 2 Sexual harassment claim rates for female workers by industry and age group

Industry name	All ages	15–24	25–34	35–44	45–54	55–64	>= 65	Percent female
Agriculture	18.50	7.49	18.13	12.78	6.90	0.76	0.25	26.20
Mining	71.39	33.67	57.77	63.02	13.56	4.74	10.04	9.71
Construction	19.84	11.30	22.90	18.73	7.56	1.84	1.08	9.58
Primary metals and fabricated metal products	23.44	31.81	37.21	33.56	14.79	2.90	8.60	19.76
Machinery manufacturing	17.41	16.97	25.79	25.54	11.64	4.08	0	22.11
Computer and electronic products	10.57	18.95	17.10	12.57	4.73	1.02	5.74	32.10
Electrical equipment, appliance manufacturing	22.18	21.52	29.14	18.68	11.33	3.84	6.31	33.62
Transportation equipment manufacturing	15.55	9.03	22.98	23.30	8.33	2.31	1.71	24.71
Wood products	22.22	17.95	32.63	24.59	6.94	10.29	0	19.91
Furniture and fixtures manufacturing	18.16	12.75	23.97	16.13	12.15	3.94	0	27.51
Miscellaneous and not specified manufacturing	21.15	22.01	32.01	19.21	10.81	2.76	0	40.88
Food manufacturing	19.58	18.39	29.58	22.79	8.48	2.97	0	37.88
Textile, apparel, and leather manufacturing	10.95	12.41	28.55	14.81	5.45	1.91	2.03	56.74
Paper and printing	8.41	10.18	15.65	11.15	2.35	0.80	1.72	32.77
Chemical manufacturing	11.26	11.06	15.23	13.49	6.38	3.79	0	36.06
Plastics and rubber products	10.46	16.51	13.81	13.86	4.69	1.38	0	31.13
Wholesale trade	9.75	12.94	12.61	10.92	5.41	1.86	0	30.42
Retail trade	9.94	7.39	13.92	11.62	4.51	1.51	1.09	49.55
Transportation and warehousing	17.85	13.73	22.94	20.20	8.42	2.20	1.67	24.67
Utilities	14.19	24.39	26.38	20.37	6.28	4.35	2.73	23.52
Publishing industries (except internet)	11.53	11.88	13.71	12.21	4.70	2.06	0	49.46
Telecommunications	33.51	46.79	49.32	39.70	15.23	14.54	15.15	40.32
Internet service providers and data processing services	46.02	31.91	69.18	37.34	19.83	8.10	0	42.90
Finance	9.12	7.24	12.03	9.68	4.70	1.47	2.59	58.93
Insurance	3.46	4.86	4.12	4.35	1.73	0.52	0.63	63.14
Real estate	5.93	3.56	7.04	5.11	2.52	0.69	0.17	49.63
Rental and leasing services	34.47	18.82	53.68	38.86	16.25	9.30	0	34.89
Professional and technical services	12.48	13.18	13.71	10.69	5.38	2.41	0.95	45.38
Administrative and support services	14.24	11.27	14.90	14.07	6.95	2.09	1.23	42.79
Educational services	2.78	1.09	3.30	3.64	2.19	0.54	0.37	69.21
Hospitals	3.77	2.30	4.61	4.78	2.36	1.14	0.50	76.48
Health care services, except hospitals	5.05	4.93	5.98	5.57	2.50	0.90	0.83	79.18
Social assistance	2.44	1.11	2.74	2.32	1.21	0.44	0.17	85.82
Arts, entertainment, and recreation	6.72	2.83	10.02	6.86	4.29	1.00	0	45.24
Accommodation	18.38	12.44	25.73	23.57	10.26	3.88	2.16	58.76
Food services and drinking places	15.00	11.26	17.80	16.51	6.27	2.68	3.47	52.38
Repair and maintenance	23.10	20.41	36.57	12.44	5.59	0.85	2.83	13.67

Table 2 (continued)

Industry name	All ages	15–24	25–34	35–44	45–54	55–64	>= 65	Percent female
Personal and laundry services	8.40	5.90	8.46	6.10	2.95	1.08	0.57	71.98
Membership associations and organizations	6.27	9.42	11.01	9.25	4.01	1.32	0.21	56.97
Public administration	16.42	16.60	27.66	20.85	7.76	2.69	1.42	45.94

Per 100,000 workers. Rates are calculated by the author from EEOC Charge Data FY2000–FY2004 based on claims by individuals in which at least one issue was sexual harassment and in which industry is reported. This table reports only those two-digit industries with at least 100 charges filed by women in the FY2000–FY2004 period. Employment data calculated using 2004 Current Population Survey

5 Sexual harassment and the hedonic labor market model

The theory of compensating differentials posits that workers receive a wage premium for adverse working conditions. A massive literature documents that workers in jobs at greater risk of fatality or injury are paid a premium for bearing greater risk. The premium pay for risk of fatality forms the basis for calculating the value of a statistical life.

The standard model of compensating differentials for risks of workplace fatality or injury has a direct parallel for the risk of sexual harassment. Sexual

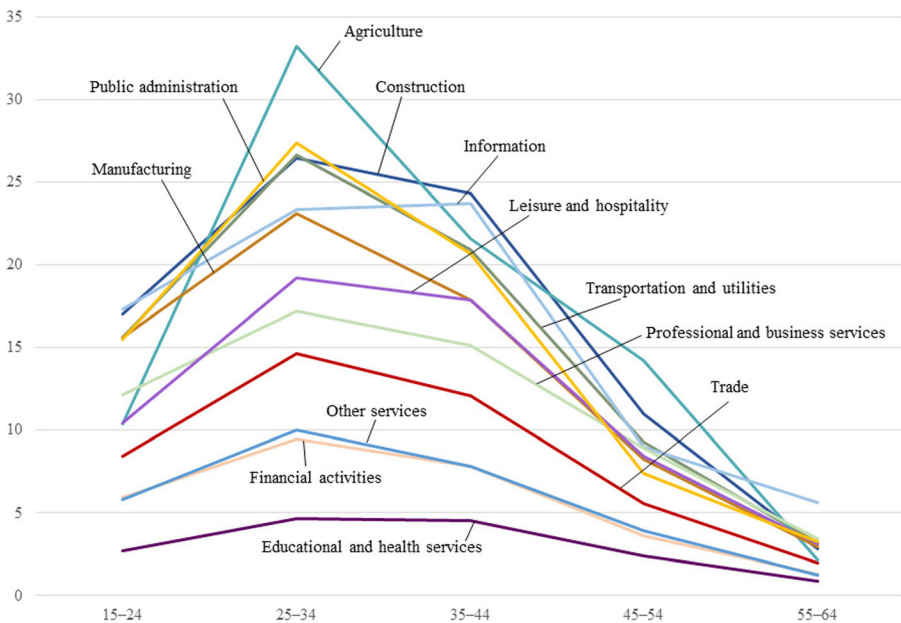


Fig. 1 Sexual harassment claim rates by age: female workers. Reported rates are per 100,000 workers. Mining not represented in figure. Mining sexual harassment rates by age are: 53 for age 15–24; 149 for age 25–34; 93 for age 35–44; 32 for age 45–54; 9 for age 55–64

harassment is unambiguously an undesirable working condition. There is extensive evidence that victims of sexual harassment suffer a range of physical, psychological, and career consequences. These costs include lower job satisfaction, worse psychological and physical health, higher absenteeism, less commitment to their organizations, and increased likelihood of quitting their jobs (see, e.g., Antecol and Cobb-Clark 2006; Fitzgerald et al. 1997; Laband and Lentz 1998; McLaughlin et al. 2017; Willness et al. 2007). Harassment may cause victims as well as their coworkers to be less productive. Indeed, in the United States, sexual harassment is a form of employment discrimination precisely because it alters the “terms, conditions, or privileges of employment” and interferes unreasonably with the ability of those in the protected classes to perform their jobs. Thus, like other workplace risks, sexual harassment imposes health losses on individuals and is an undesirable component of the job. When a job is undesirable, firms need to pay premiums to attract and retain workers.²¹

The costs to workplaces reflect the flip side of the costs to victims. Firms incur costs from a workplace in which workers are less satisfied, less productive, and have higher absenteeism and planned turnover, all which have direct costs to firms as well as create costly disruptions that spill over to the workplace generally (see, e.g., U.S. Merit Systems Protection Board 1995; Willness et al. 2007; U.S. Equal Employment Opportunity Commission 2016).

Although one might expect that profit-maximizing firms would have an incentive to eliminate such unproductive behavior, because sexual harassment is costly for firms to monitor and eliminate, it still occurs in some workplace environments. That is, as with the risk of fatality or injury, workplaces are not risk-free because it is not costless to make them risk-free. It is also not costless to purge workplaces of harassers even when they are known. As the #MeToo movement has revealed, firms have covered up and paid off victims to protect their prized employees.

The standard wage equation specification used in the hedonic wage literature is of the following form:

$$\ln(\text{wage}) = \alpha + \beta \text{Risk} + X\gamma + \varepsilon$$

where *wage* is the hourly wage rate; *Risk* is a measure of job risk (in this case, the risk of sexual harassment); *X* is a vector of explanatory variables such as years of education; α , β , and γ are parameters to be estimated; and ε is a random error term.

I estimate wage equations for women using CPS data for 2005. The year 2005 is chosen to immediately follow the years on which the sexual harassment rates are based. The dependent variable is the log of the hourly wage, which is either reported directly or calculated as weekly earnings divided by usual hours

²¹ As coverage of Steve Wynn’s pattern of sexually harassing employees made clear, the high pay at Wynn casinos relative to alternative jobs in Las Vegas served to reduce turnover and attract employees despite widespread risk of sexual harassment. See Alexandra Berzon, Chris Kirkham, Elizabeth Bernstein, and Kate O’Keefe, “Dozens of People Recount Pattern of Sexual Misconduct by Las Vegas Mogul Steve Wynn,” *Wall Street Journal*, January 27, 2018, <https://www.wsj.com/articles/dozens-of-people-recount-pattern-of-sexual-misconduct-by-las-vegas-mogul-steve-wynn-1516985953>.

worked per week. In addition to the sexual harassment risk rate, the explanatory variables are indicator variables for occupation (management, business, financial; professional and related; healthcare support; protective service; food preparation and serving related; building and grounds cleaning and maintenance; personal care and service; sales and related; office and administrative support; natural resources, construction, maintenance; and production, transportation, material moving), race (mutually exclusive categories of white; black; American Indian; Asian or Pacific Islander; or more than one race reported), Hispanic ethnicity, married, employed by the government, union member or covered by union or employee association contract, full time employment, metropolitan location, and region. I also control for educational attainment in years, calculated from information on highest educational attainment and years in degree program, and for potential experience, calculated as age minus education minus 5.²²

Because there is evidence that women are more likely to be sexually harassed in male-dominated workplaces (e.g., U.S. Merit Systems Protection Board 1995; McCann 2005; U.S. Equal Employment Opportunity Commission 2016), it is possible that any positive effect of sexual harassment for women reflects the higher pay associated with male-dominated jobs. I therefore also control for the percent female in the individual's narrowly-defined (4-digit) industry. Because the risk measure is assigned to all individuals within the same group on which the risk measure is calculated, I estimate clustered standard errors at the level that the risk measure is calculated.

The sample is restricted to women who are employed, not self-employed, ages between 18 and 64, with wages between \$1.50 and \$100 per hour. Descriptive statistics for the variables included in the wage equations are reported in Appendix 1.

Table 3 reports regressions for women overall as well as stratified by race into two groups, white and nonwhite. The regression reported in column 1, which is based on all women in the sample, shows a statistically significant wage premium for the risk of sexual harassment, with a coefficient of 0.0018. This estimate implies that a 1-in-100,000 increase in risk is associated with a 0.18% increase in wage. The log wage difference between a job with zero sexual harassment risk and a job with the gender-specific mean sexual harassment risk is 0.0155, or about 25 cents per hour. The implied total annual compensation assuming 2000 hours worked per year is therefore \$500, which is similar to the annual compensation for fatality risks (Viscusi 2018).

Columns 2 and 3 of Table 3 report the corresponding estimates stratified by race, with the regression results for white women reported in column 2 and all nonwhite women including controls for nonwhite race in column 3. Because white women form the majority of the sample, it is unsurprising that the coefficient on sexual harassment risk in column 2 of 0.200 is similar to that in column 1. But the results for nonwhite women show a statistically

²² Potential experience is included in the regressions because actual work experience is not reported in the CPS. Because the analysis is restricted to female workers, there is no implication for male-female comparisons.

Table 3 Wage compensation for sexual harassment risk. Dependent variable: Log of hourly wage

	All females	White females	Nonwhite females
Sexual harassment rate	0.0018* (0.0009)	0.0022* (0.0009)	0.0003 (0.0011)
Percent female in industry	-0.2000** (0.0367)	-0.1857** (0.0375)	-0.2534** (0.0437)
Potential experience	0.0236** (0.0026)	0.0249** (0.0027)	0.0180** (0.0026)
Potential experience squared/100	-0.0360** (0.0056)	-0.0384** (0.0059)	-0.0260** (0.0056)
Hispanic/Latino	-0.0645** (0.0071)	-0.0703** (0.0075)	-0.0161 (0.0208)
White	0.0011 (0.0129)	–	–
Black/African American	-0.0712** (0.0152)	–	-0.0572** (0.0156)
American Indian/Alaskan Native	-0.0444+ (0.0250)	–	-0.0549* (0.0249)
Asian	-0.0063 (0.0171)	–	0.0065 (0.0167)
Government employer	-0.0478* (0.0190)	-0.0557** (0.0207)	-0.0164 (0.0167)
Union or employee association	0.0944** (0.0092)	0.0881** (0.0088)	0.1187** (0.0167)
Years of education	0.0686** (0.0022)	0.0695** (0.0023)	0.0642** (0.0027)
Married	0.0358** (0.0070)	0.0336** (0.0075)	0.0424** (0.0098)
Metropolitan location	0.1311** (0.0057)	0.1339** (0.0060)	0.1084** (0.0132)
Full-time	0.1345** (0.0146)	0.1307** (0.0147)	0.1568** (0.0202)
Northeast	0.0801** (0.0069)	0.0754** (0.0081)	0.0950** (0.0121)
Midwest	0.0242** (0.0053)	0.0226** (0.0056)	0.0275* (0.0128)
West	0.0873** (0.0053)	0.0859** (0.0056)	0.0919** (0.0130)
Management, business, financial	0.3647** (0.0256)	0.3562** (0.0272)	0.4014** (0.0272)
Professional and related	0.2961** (0.0341)	0.2852** (0.0360)	0.3460** (0.0337)
Healthcare support	0.0133 (0.0341)	0.0196 (0.0370)	0.0190 (0.0336)

Table 3 (continued)

	All females	White females	Nonwhite females
Protective service	0.0309 (0.0396)	0.0783+ (0.0405)	-0.0472 (0.0400)
Food preparation and serving related	-0.1286** (0.0398)	-0.1383** (0.0425)	-0.0803* (0.0376)
Building and grounds cleaning and maintenance	-0.0956** (0.0319)	-0.0918** (0.0336)	-0.0916** (0.0338)
Personal care and service	-0.0787* (0.0336)	-0.0794* (0.0375)	-0.0643+ (0.0347)
Office and administrative support	0.0813** (0.0230)	0.0696** (0.0243)	0.1317** (0.0270)
Natural resources, construction, maintenance	0.0562 (0.0400)	0.0495 (0.0430)	0.0963+ (0.0577)
Production, transportation, material moving	-0.0388 (0.0264)	-0.0431 (0.0274)	-0.0123 (0.0315)
Constant	1.1117** (0.0626)	1.0883** (0.0639)	1.2127** (0.0689)
Observations	77,896	64,290	13,606
Adjusted R-squared	0.40	0.39	0.40

Robust standard errors clustered by two-digit industry and age group are reported in parentheses. All values weighted by earnings weight. Sample is comprised of female respondents to the 2005 CPS who are employed, not self-employed, ages between 18 and 64, with wages between \$1.50 and \$100 per hour. + significant at 10%; * significant at 5%; ** significant at 1%

insignificant coefficient on sexual harassment risk, indicating no compensating differential for this risk exposure.

This pattern may indicate that white and nonwhite women are in noncompeting markets and face different offer curves with respect to the risk of exposure to sexual harassment (Viscusi and Hersch 2001). In fact, nonwhite women are at higher risk than white women, with the average sexual harassment rate calculated from the sample used in estimation equal to 9.16 for nonwhite women and 8.46 for white women. The lower compensation that nonwhite women receive for sexual harassment risk, coupled with the higher risk levels they experience, parallels the lack of compensation for fatality risk found in Hersch and Viscusi (2010) among legal immigrants to the U.S. from Mexico.

6 Calculating the value of the risk of sexual harassment

Compensation for sexual harassment risks has an important implication in terms of monetizing the value to workers of exposure to this risk. To provide a

numerical illustration, suppose that a group of 10,000 workers each receive an extra \$500 to incur a sexual harassment risk of 1/10,000. Then together this group will experience one expected claim of sexual harassment (i.e., 10,000 workers \times 1/10,000 risk) and will receive \$5 million in compensation (i.e., 10,000 workers \times \$500 per worker). In this example, \$5 million is the amount of money that workers receive for facing risks that lead to one expected case of sexual harassment to the group. In a manner analogous to the approach in the economics literature for the value of a statistical life, this amount represents the value of statistical harassment (VSH).

The procedure for calculating the VSH directly from the empirical estimates requires information on the effect of the sexual harassment risk on the log of wages (0.0018), the average hourly wage rate (\$16.33), the number of hours in a full-time work year (based on the assumption of 50 weeks per year at 40 hours per week), and any adjustment for units (in this case, the risk is per 100,000 workers).

If we denote the coefficient on the rate of sexual harassment in the log wage equation by b , then parallel to the calculation of the VSL,²³ the VSH is calculated as

$$VSH = b \times \text{average wage} \times 2,000 \times 100,000.$$

Following this procedure yields VSH estimates of \$5.88 million, which, in 2017, is \$7.6 million. This value reflects the additional payment to a group of 100,000 female workers of an additional 1-in-100,000 risk of incurring a sexual harassment claim filed with the EEOC. This value captures both the effect of the harassment claim itself as well as the average influence of all harassment incidents in that industry and age group that are correlated with the claim. If the worker is not exposed to any harassment risk at her particular firm, there will be no wage premium, just as there is no wage premium for industry fatality risks at a risk-free firm. However, to the extent that there is a harassment risk, the coefficient for the harassment risk variable will reflect harassment incidents that lead to claims as well as incidents that are correlated with these claims.

7 Policy implications

It is useful to review the role of the VSL in promoting deterrence of workplace fatalities. Government agencies that use benefit-cost analysis in setting regulatory standards for safety, such as the Department of Transportation and the Environmental Protection Agency, use the VSL to establish the monetary value of preventing one expected death (Viscusi 2018). By providing a measure of the extra compensation

²³ See, for example, equation 10 in Gentry and Viscusi (2016) and equation 3 in Viscusi and Masterman (2017).

workers receive for fatality risk, the VSL derived from the labor market establishes both the value of safety to the worker and the price of safety for the injurer. Specifically, it represents the amount of money a firm should be willing to spend to reduce the risk of one expected fatality. This tradeoff between safety and money is common to many other market contexts. Consumers choose between cars with more or less safety equipment (Rohlf's et al. 2015), with prices reflecting the higher costs to manufacturers of greater safety equipment as well as how much consumers value the safety improvement. Manufacturers respond to workers' tradeoffs by producing cars with less safety equipment that sell at lower prices and with more safety equipment that sell at higher prices. If car manufacturers find no market for their cars at a particular safety-price combination, they will alter the mix to meet consumer demand.

Continuing the analogy of the value of a statistical life to the sexual harassment context, the VSH establishes the monetary value of avoiding harassment to female workers and the price of reducing harassment to employers. Setting damages in sexual harassment cases equal to the VSH will send the appropriate price signal to firms of the average economic value of harassment risks to workers; such damages would represent the amount of money employers should be willing to spend to reduce the risk of sexual harassment at their organization.

To date, the only mechanisms employed in efforts to deter workplace sexual harassment are education and systems for reporting and mediation. When these approaches fail, the remaining recourse is to file a charge with the EEOC. Although the EEOC can and does litigate some claims, this is quite rare, and most claims will be filed and litigated privately. There is no apparent connection between current levels of damages awards and efficient deterrence, and to my knowledge no one has suggested using damages awards for the purpose of efficient deterrence of sexual harassment.

But thwarting the current approaches to curb sexual harassment is the lack of any monetary basis for setting awards for efficient deterrence. Because of nondisclosure agreements, there is little public information on damages payments to victims of sexual harassment. Although the lawsuit filed by former Fox News host Gretchen Carlson resulted in a highly publicized \$20 million settlement,²⁴ most settlement awards are likely to be far more modest. For example, five women who accused the co-founder of the company Guess of sexual harassment received a total settlement of \$500,000.²⁵

My proposal is that if the policy objective is to establish efficient deterrence, the sum of compensatory and punitive damages should equal the value of statistical harassment. To do so, the statutory cap currently set at \$300,000 for the largest firms would need to be removed or at least increased to \$7.6 million per claim.

²⁴ Michael M. Grynbaum and John Koblin, "Fox Settles with Gretchen Carlson over Roger Ailes Sex Harassment Claims," *New York Times*, September 6, 2016, <https://www.nytimes.com/2016/09/07/business/media/fox-news-roger-ailes-gretchen-carlson-sexual-harassment-lawsuit-settlement.html>.

²⁵ Valeriya Safronova, "Paul Marciano Will Leave Guess after Sexual Harassment Settlements," *New York Times*, June 12, 2018, <https://www.nytimes.com/2018/06/12/style/guess-harassment-resignation.html>.

This proposal also implicitly embodies the key concepts of the economic theory of deterrence. It not only recognizes the fact that sexual harassment involves irreplaceable nonmonetary harms for the particular claimant, but it also captures the broader incidence of sexual harassment at the workplace. The standard economic theory of optimal deterrence is that to provide efficient levels of deterrence, the level of total compensatory and punitive damages should equal the value of the harm divided by the probability of detection (Polinsky and Shavell 1998). A practical difficulty that usually arises in applying this formula is that the probability of detection may not be known, and in any lawsuit that has been brought to trial the misconduct has been detected. Attempting to infer the probability of detection at the time of the wrongful conduct remains a speculative enterprise.

Use of the VSH avoids this issue. The risk measure used in calculating the VSH pertains to the risk of EEOC charges. As a result, this measure will likely be correlated with cases of sexual harassment that do not lead to charges. The VSH measure consequently captures both the value attached to the risk of an EEOC charge and will also capture the valuation of other harassment incidents that are known to workers but which do not lead to an EEOC claim.

8 Conclusion

Workplace sexual harassment is a widespread problem that has proven largely immune to legislation and workplace policies designed to prevent such behavior. It is costly to victims. And, although it is also costly to organizations, it is not costly enough to deter workplace sexual harassment. Using labor market data in conjunction with sexual harassment charges filed with the EEOC, I establish that white women—but not nonwhite women—receive a pay premium for exposure to risk of sexual harassment in the worker's industry, age group, and gender. Based on this pay premium, I calculate the value of statistical harassment that is the counterpart of the value of a statistical life and which can be used to provide guidance for efficient deterrence of sexual harassment.

My policy proposal is to raise the current statutory cap on damages under federal law to the value of statistical harassment of \$7.6 million in \$2017 so that the penalties can reach a level sufficient to deter workplace sexual harassment and to reflect the value of a reduction in harassment to the women who are being protected. The recent #MeToo movement has raised visibility about the prevalence and severity of sexual harassment and may lead to further deterrence by increasing the probability that sexually harassing behavior will be reported and lead to legal sanctions.

Acknowledgements The author thanks Kathryn Anderson, Vivia Chen, Sarah Dalton, Danielle Drory, Rebecca Greenfield, Erin Meyers, Christina Stoddard, W. Kip Viscusi, and Amy Wolf for valuable comments.

Appendix 1

Table 4 Descriptive statistics

	Means (standard deviation) or percent
Hourly wage (2005\$)	16.33 (10.36)
Log of hourly wage	2.63 (0.56)
Sexual harassment rate by industry, age, and sex	8.61 (7.93)
Female share of employment in 4-digit industry	0.59 (0.20)
Potential experience	20.85 (12.31)
Hispanic/Latino	11.53
White	79.89
Black/African American	13.34
American Indian/Alaskan Native	0.71
Asian or Pacific Islander	4.39
Government employer	20.00
Union or employee association	13.26
Years of education	13.85 (2.64)
Married	54.14
Metropolitan location	84.12
Full-time	78.49
Northeast	19.29
Midwest	23.30
West	21.48
South	35.92
Management, business, financial	13.04
Professional and related	25.97
Healthcare support	4.45
Protective service	1.08
Food preparation and serving related	6.09
Building and grounds cleaning and maintenance	3.01
Personal care and service	3.90
Sales	10.71
Office and administrative support	24.16
Natural resources, construction, maintenance	0.98
Production, transportation, material moving	6.62
Observations	77,896

Sample is comprised of female respondents to the 2005 Current Population Survey who are employed, not self-employed, ages between 18 and 64, and have hourly wages between \$1.50 and \$100 per hour. All values weighted by earnings weight

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