MISS DIAGNOSIS: GENDERED INJUSTICE IN MEDICAL MALPRACTICE LAW

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Abstract

Women patients have experienced a history of discrimination in medical practice. Medical malpractice litigation offers an avenue for patients affected by practitioner negligence to recoup the costs inflicted by their injuries. The present study investigates the impact of patient gender on plaintiffs' recovery amounts in medical malpractice suits alleging delayed, wrongful, or misdiagnosis, as women are more vulnerable to diagnosis-related malpractice. This study also analyzes the impact of contextual factors such as state demographics, state malpractice legislation, and features of each instance of litigation, such as the duration of each case. Using a national database of resolved malpractice cases from 2004 to 2018, this study uses several different statistical models to shed light on the contours of the gender gap in medical malpractice litigation. This study also offers suggestions for future research and potential solutions to address the gender gap and increase equal access to legal recourse after medical injury due to negligence for patients of all genders.

INTRODUCTION

Women have historically experienced disadvantages in accessing quality medical care.[1] One major disadvantage that women face relative to their male counterparts is the risk of misdiagnosis—which includes delays in diagnosis, wrongful diagnosis, and no

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[1] The author recognizes that concerns about quality of care apply to other minority groups, including gender minority and racial minority groups, and that gender intersects with other identity factors like race and age. Given the limitations of the data, *see infra* Part IV.A., the focus of this study is on women as identified by national datasets. See *infra* Part III.A. for more detailed information on the datasets used. See *infra* Parts I.C.4. and IV for further discussion of intersectional disadvantages for plaintiffs in medical malpractice suits and how to address such intersectionality in future research.

diagnosis at all.[2] Women are more likely to face misdiagnosis than men.[3] This can be attributed to two main factors: the dearth of medical scientific knowledge about women's health[4] and the widespread distrust among health professionals of their women patients relative to male patients.[5] The combination of the "knowledge gap"—the medical community's lack of knowledge about women's health due to women's historical underrepresentation in medical research—and the trust gap—the medical profession's history of distrusting or downplaying women's reports of their own symptoms—creates an increased risk of missed, delayed, and incorrect diagnoses for women.[6]

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[2] *See* Trisha Torrey, *How Common Is Misdiagnosis or Missed Diagnosis?*, VERY WELL HEALTH (May 30, 2019), https://www.verywellhealth.com/how-common-is-misdiagnosis-or-missed-diagnosis-2615481 [https://perma.cc/WT9L-G4ET] (defining a misdiagnosis as "a situation when your doctor tells you that you have some illness or condition, but it's incorrect" and a missed diagnosis as "the lack of a diagnosis, usually leading to no or inaccurate treatment").

[3] *See generally* David E. Newman-Toker et al., *Missed Diagnosis of Stroke in the Emergency Department: A Cross-Sectional Analysis of a Large Population-Based Sample*, 1 DIAGNOSIS 155, 158, 166 (2014) (finding that women are more likely than men to have their strokes misdiagnosed); Kiera Carter, *The Frustrating Reasons Why Doctors Constantly Misdiagnose Women*, PREVENTION (Jan. 31, 2019), https://www.prevention.com/health/a26100121/misdiagnosed-women/ [https:// perma.cc/RD4Q-S45V] (noting that women are more likely than men to be misdiagnosed when they are experiencing heart attacks, autoimmune diseases, or sex-specific conditions); Gina Shaw, *Why Women Struggle to Get the Right Diagnosis*, WEBMD HEALTH NEWS (June 8, 2018), https://www.webmd.com/ women/news/20180607/why-women-are-getting-misdiagnosed [https://perma.cc/VBC8-FR8H] (noting that women are more likely than men to be misdiagnosed during a heart attack or stroke, are more likely to have their autoimmune diseases misdiagnosed, and more likely to have their pain underestimated by health professionals); Laura Kiesel, *Women and Pain: Disparities in Experience and Treatment*, HARVARD HEALTH BLOG (Oct. 9, 2017), https://www.health.harvard.edu/blog/women-and-pain-disparities-in-experience-and-treatment-2017100912562 [https://perma.cc/UW7T-WX29] (noting that women's pain is more likely than men's to be underestimated by medical professionals).

[4] *See, e.g.*, CAROLINE CRIADO PEREZ, INVISIBLE WOMEN: DATA BIAS IN A WORLD DESIGNED FOR MEN 198 (2019) (referring to this phenomenon as the "gender data gap" and applying it to various aspects of life beyond medicine). *See generally* MAYA DUSENBERY, DOING HARM: THE TRUTH ABOUT HOW BAD MEDICINE AND LAZY SCIENCE LEAVE WOMEN DISMISSED, MISDIAGNOSED, AND SICK 53–137 (2018) [hereinafter DUSENBERY, DOING HARM].

[5] *See, e.g.*, DUSENBERY, DOING HARM, *supra* note 4, at 187–88 (discussing the history of medical professionals discounting women's pain); *see also supra* note 3 and accompanying text.

[6] The terms "knowledge gap" and "trust gap" were coined by Maya Dusenbery. DUSENBERY, DOING HARM, *supra* note 4, at 23, 61. Caroline Criado Perez referred to the knowledge gap alternatively as the "gender data gap," but applied the term more broadly to aspects of daily life beyond health and medicine. CRIADO PEREZ, *supra* note 4, at 198.

The legal realm of medical malpractice offers a remedy for individuals who have been adversely affected by medical errors due to negligence, including those who have suffered wrong, delayed, or missed diagnoses.[7] However, the legal standard for medical malpractice currently protects the common practice of discounting women patients and their reports of their symptoms. The malpractice standard only requires that practitioners abide by what ordinary practitioners in their field would do in similar situations;[8] the pervasiveness of the knowledge and trust gaps suggests that this standard more negatively impacts women who experience and subsequently file suit for diagnosis-related malpractice than their male counterparts.

The present study analyzes the interaction of the knowledge and trust gaps with the legal standard for medical malpractice and the resulting impact on women's diagnosis-related medical malpractice lawsuits. Part I offers a brief history of the knowledge and trust gaps and their impact on patient care. Part II presents an overview of medical malpractice law and the gaps in the law which perpetuate gender bias. Part III outlines the methodology used for this study to assess the impact of the knowledge and trust gaps on women patients who pursue medical malpractice actions. Part III also explains various statistical models and their usefulness in explaining gender bias in medical malpractice actions. Part IV summarizes the results of this study and discusses the implications for women patients who pursue medical malpractice lawsuits. Part IV concludes by suggesting legal reforms to address gender bias in medical malpractice law.

Ultimately, this study finds that patient gender does significantly impact medical malpractice lawsuit outcomes and that gender interacts with other key contextual factors to produce such disparities. The presence of a gendered impact indicates that women are disadvantaged both as patients in the healthcare setting and later as plaintiffs in the legal setting, and that the current legal standard for medical malpractice offers a disincentive to change medical practice and patient care.

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[7] *See generally* BARRY R. FURROW ET AL., HEALTH LAW: CASES, MATERIALS AND PROBLEMS 207–47 (8th ed. 2018) (discussing medical malpractice as a legal tool available to those patients who can show their medical practitioner fell below the standard of care that a medical professional is legally required to give to a patient). See *infra* Part II for more information about medical malpractice and the legal standard of care.

[8] *See* James S. Higgins, *Defense of Medical Malpractice Cases*, in 16 AM. JUR. 2D *Evidence* § 137 (1998).

I. The Knowledge Gap, the Trust Gap, and the Consequences for Women

A. The Knowledge Gap

There is less information available about women's health than about men's health.[9] In other words, there is a knowledge gap between the medical profession's understanding of men's health and women's health. This is a natural consequence of women's historical underrepresentation in biomedical studies and the relative neglect of diseases that predominantly affect women in medical research, both of which continue to this day despite patient advocacy efforts.[10] The resulting knowledge gap affects the quality of medical care that women patients receive.

The male body as the default for medical science goes back to the Ancient Greeks: Aristotle believed women's bodies were simply "mutilated" male bodies.[11] "Ovaries" were referred to as female testicles and were not named as a separate organ until the seventeenth century.[12] Even in the twenty-first century, the male body is still often depicted as the default human body; medical textbooks often use illustrations of the male body to refer to neutral body parts. A 2008 study of over 16,000 images in textbooks recommended by prestigious universities in the United States, Europe, and Canada found that male bodies were used three times more frequently than female bodies to illustrate non-reproductive body parts.[13] This is not a harmless error; there are actually sex-based

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[9] *See* CRIADO PEREZ, *supra* note 4, at 196 (explaining that medical science research has historically been based on the "average" male body); Reshma Jagsi et al., *Under-Representation of Women in High-Impact Published Clinical Cancer Research*, 115 CANCER 3293, 3299 (2009) (finding that women are underrepresented in cancer research); Sherry A. Marts & Sarah Keitt, *Foreword: A Historical Overview of Advocacy for Research in Sex-Based Biology,* 34 ADVANCES IN MOLECULAR & CELL BIOLOGY v (2004) (discussing a long-standing need to collect more data on women's health and bodies).

[10] *See* DUSENBERY, DOING HARM, *supra* note 4, at 24–25 (noting that women have been excluded from many large-scale, seminal studies like the Baltimore Longitudinal Study of Aging, the Physician's Health Study, the 1982 Multiple Risk Factor Intervention Trial, and even some major studies on breast cancer).

[11] *See* CRIADO PEREZ, *supra* note 4, at 196.

[12] *See id.*

[13] Plataforma SINC, *Medical Textbooks Use White, Heterosexual Men As a 'Universal Model'*, SCIENCE DAILY (Oct. 17, 2008), https://www.sciencedaily.com/releases/2008/10/081015132108.htm [https://perma.cc/PTY6-58UU].

differences in human tissues, organs, and the course and impact of diseases.[14] Yet women have been and continue to be underrepresented in medical research.[15] Thus, for centuries, medical professionals have been treating women patients according to a male model that often does not fit women's bodies.

The National Institutes of Health (NIH), the largest public funder of biomedical research,[16] took note of this issue in 1985, when it issued new report on gender representation in medical research.[17] But not much tangible change occurred until after 1990, when the Society for the Advancement of Women's Health Research (SWHR) demanded an audit of the NIH by the U.S. Government Accountability Office (GAO).[18] Following the GAO audit, the NIH formed its Office of Research on Women's Health (ORWH);[19] mandated the inclusion of women as research subjects; and launched the Women's Health Initiative, a huge medical research study to collect the data on women that was already available for men.[20] In 1993, the NIH Revitalization Act made the ORWH a permanent part of the NIH[21] and mandated that NIH-funded studies include

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[14] *See* Natasha A. Karp et al., *Prevalence of Sexual Dimorphism in Mammalian Phenotypic Traits*, 8 NATURE COMM., June 26, 2017, https://www.nature.com/articles/ncomms15475 [https://perma.cc/9BB8-8KLM].

[15] *See* Jagsi et al., *supra* note 9, at 3299 (finding that women are underrepresented in cancer research); *see also* Press Release, George Washington University Public Health, Women Remain Underrepresented in Medical Science, New Report Says (Mar. 3, 2014) (on file with George Washington University), https://publichealth.gwu.edu/content/women-remain-underrepresented-medical-science-new-report-says [https://perma.cc/PEM8-U6HL] ("Women are still underrepresented in biomedical research, and when included, often the differences between women and men are not analyzed fully. This is a gap that must be addressed in order to achieve better outcomes for women.").

[16] NAT'L INSTS. OF HEALTH, OUR SOCIETY, https://www.nih.gov/about-nih/what-we-do/impact-nih-research/our-society [https://perma.cc/9FBC-M3E6].

[17] *See generally* U.S. PUB. HEALTH SERV., PUB. HEALTH REPORTS 100, NO. 1, REPORT OF THE PUBLIC HEALTH SERVICE TASK FORCE ON WOMEN'S HEALTH ISSUES (1985).

[18] *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/T-HRD-90-38, NATIONAL INSTITUTES OF HEALTH: PROBLEMS IN IMPLEMENTING POLICY ON WOMEN IN STUDY POPULATIONS, TESTIMONY BY MARK V. VADEL BEFORE SUBCOMMITTEE ON HEALTH AND THE ENVIRONMENT, COMMITTEE ON ENERGY AND COMMERCE, HOUSE OF REPRESENTATIVES (1990).

[19] *See* U.S. DEP'T HEALTH & HUMAN SERV., 92-3457, REPORT OF THE NATIONAL INSTITUTES OF HEALTH: SEPTEMBER 4–6, 1991 (1992).

[20] *See* LESLIE LAURENCE & BETH WEINHOUSE, OUTRAGEOUS PRACTICES: HOW GENDER BIAS THREATENS WOMEN'S HEALTH 78–79 (1994).

[21] 42 U.S.C. § 287d (2018).

enough women and racial minorities to conduct a valid analysis of differences.[22] It also mandated increased efforts to research conditions that disproportionately affect women, such as breast and ovarian cancers and osteoporosis.[23] While this was a sign of much-needed improvement, these measures were not as progressive as they seemed: The mandate on women's inclusion only applied to later phases of research and studies enrolling human participants, so studies at the cellular level or in the animal research phase could still be all male, an imbalance not addressed by the NIH until 2014.[24] These measures also failed to have the desired impact. Women continue to be underrepresented in medical research,[25] and even if adequately represented, the majority of studies that include women don't conduct or publish gender difference analyses.[26] Research on diseases disproportionately affecting women also remain underfunded compared to diseases that predominantly affect men.[27]

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[22] *See* Guideline for the Study and Evaluation of Gender Differences in the Clinical Evaluation of Drugs, 58 Fed. Reg. 39,406 (July 22, 1993).

[23] 42 U.S.C. § 284e (2018).

[24] *See* Janine A. Clayton & Francis S. Collins, *Policy: NIH to Balance Sex in Cell and Animal Studies*, 509 NATURE 282, 282 (2014).

[25] A 2000 GAO audit revealed individual studies still weren't analyzing results by gender. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/HEHS-00-96, NIH HAS INCREASED ITS EFFORTS TO INCLUDE WOMEN IN RESEARCH (2000). A 2015 GAO review stated that it was difficult to gauge improvement in gender representation from the NIH's aggregate data. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-01-754, BETTER OVERSIGHT NEEDED TO HELP ENSURE CONTINUED PROGRESS INCLUDING WOMEN IN HEALTH RESEARCH (2015). Independent studies show women have remained significantly underrepresented. *See, e.g.,* Carolyn M. Mazure & Daniel P. Jones, *Twenty Years and Still Counting: Including Women as Participants and Studying Sex and Gender in Biomedical Research*, 15 BOS. MED. CTR. WOMEN'S HEALTH 94 (2015); Stacie E. Geller et al., *Inclusion, Analysis, and Reporting of Sex and Race/Ethnicity in Clinical Trials: Have We Made Progress?*, 20 J. WOMEN'S HEALTH 315 (2011).

[26] *See* Basmah Safdar et al., *Inclusion of Gender in Emergency Medicine Research*, 18 ACAD. EMERGENCY MED. e1, e3 (2011) (finding that few emergency medicine studies examine the effect of gender on health outcomes); Andrea H. Weinberger, Sherry A. McKee & Carolyn M. Mazure, *Inclusion of Women and Gender-Specific Analyses in Randomized Clinical Trials of Treatments for Depression*, 19 J. WOMEN'S HEALTH 1727, 1730–31 (2010) (finding that, while understanding gender differences is crucial to effective treatment, many recent studies of depression treatment do not examine outcomes by gender).

[27] *See* Anita Holdcroft, *Gender Bias in Research: How Does it Affect Evidence Based Medicine?*, 100 J. ROYAL SOC'Y MED. 2, 2 (2007) (noting that even when research includes women, sex-specific differences are not studied); Ruth L. Kirschstein, *Research on Women's Health*, 81 AM. J. PUB. HEALTH 291, 292 (1991) (expressing the need to continue increasing funding for women's health research).

Moreover, while it has received the most legislative attention regarding women's representation, the NIH is not the only funder of biomedical research. Most research is privately funded by pharmaceutical companies and reviewed by the U.S. Food and Drug Administration (FDA).[28] There are no federal guidelines requiring these private funders to include women in their studies and the FDA has not implemented any such requirements into its approval process. In fact, from 1977 to 1993, the FDA explicitly prohibited women "of childbearing potential" from participating in early phase drug trials,[29] which had a chilling effect on women's representation altogether; researchers were hesitant to enroll women even in later phases of research and women remain underrepresented in the majority of late phase studies.[30] The FDA still does not require representation of female cells or animals in early phase research nor gender difference analyses for late phase research.[31] As a result, women have been left out of some of the biggest and most influential medical studies in recent history, and continue to be underrepresented in biomedical research.[32] For instance, women were completely left out of the Baltimore Longitudinal Study of Aging, which purported to explore "normal human aging;" the Physician's Health Study, also known as the famous 'baby aspirin' study on the preventative effects of aspirin on heart disease; the 1982 Multiple Risk Factor Intervention Trial studying the effects of diet and exercise on heart disease; and even studies examining the effects of obesity on breast cancer.[33]

That is not to say that medical knowledge about women's health has not advanced. However, the knowledge we do have about women's health has not yet translated well into medical education and the practice of medicine, and our medical models are still

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[28] *See* Earl Ray Dorsey et al., *Funding of US Biomedical Research, 2003-2008*, 303 JAMA 137, 140 (2010) (identifying private biopharmaceutical companies as the biggest contributors to modern medical research).

[29] *See* U.S. FOOD & DRUG ADMIN., GENDER STUDIES IN PRODUCT DEVELOPMENT: HISTORICAL OVERVIEW, https://www.fda.gov/science-research/womens-health-research/gender-studies-product-development-historical-overview [https://perma.cc/8A5D-EXYG].

[30] *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/HRD-93-17, FDA NEEDS TO ENSURE MORE STUDY OF GENDER DIFFERENCES IN PRESCRIPTION DRUGS TESTING (1992).

[31] *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-01-754, WOMEN SUFFICIENTLY REPRESENTED IN NEW DRUG TESTING, BUT FDA OVERSIGHT NEEDS IMPROVEMENT (2001).

[32] *See* Kat Kwiatkowski et al., *Inclusion of Minorities and Women in Cancer Clinical Trials, a Decade Later: Have We Improved?* 119 CANCER 2956, 2961–62 (2013) (finding that women continue to be underrepresented in clinical trials).

[33] DUSENBERY, DOING HARM, *supra* note 4, at 25.

based on the average male body as a default.[34] The first United States textbook on gender-specific medicine was not published until 2004.[35] By 2011, about 70% of medical schools in the United States and Canada still had minimal to no curriculum coverage on sex and gender differences.[36]

This history of women's exclusion has led to a significant knowledge gap, meaning the medical community has less information about women's bodies and health than it does about men's bodies and health. This has obvious implications for the quality of women's healthcare. But there is more to the story than the knowledge gap; there is also a deep history of distrust of women patients that impacts quality of care.

B. The Trust Gap

The trust gap is the increased distrust that medical professionals have historically had and still have of women patients as compared to men. In general, medical professionals are more likely to discount women patient's symptoms in favor of their own knowledge about what illnesses 'typically' affect women.[37] Professionals are also more likely to discount women's symptoms altogether and label them as psychological in origin.[38] This leads to a pervasive distrust between women and their medical practitioners: Professionals do not trust women patients as reliable reporters of their own symptoms and, as women patients feel discounted and distrusted, they in turn distrust their medical professionals.

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[34] *See* U.S. DEP'T HEALTH & HUMAN SERV., HRSA-P-DM-95-1, FIFTH REPORT: WOMEN AND MEDICINE (1995).

[35] MARIANNE J. LEGATO, PRINCIPLES OF GENDER-SPECIFIC MEDICINE (2004).

[36] *See* Virginia M. Miller et al., *Embedding Concepts of Sex and Gender Health Differences into Medical Curricula*, 22 J. WOMEN'S HEALTH 194, 196 (2013).

[37] *See generally* Elizabeth M. Marks & Myra S. Hunter, *Medically Unexplained Symptoms: An Acceptable Term?*, 9 BR. J. PAIN 109, 111 (2015); Allen Frances, *The New Somatic Symptom Disorder in DSM-5 Risks Mislabeling Many People as Mentally Ill*, 346 BR. MED. J. f1580, f1581 (2013); David Edelberg, *Fibromyalgia Confounds Allopathic Habits of Mind*, 14 AMA J. ETHICS 305, 306–07 (2012); AM. PSYCHIATRIC ASS'N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 309–29 (5th ed. 2013); U.S. DEP'T HEALTH & HUMAN SERV., *supra* note 34.

[38] *See* Marks & Hunter, *supra* note 37, at 111; Frances, *supra* note 37, at f1581; Edelberg, *supra* note 37, at 306–07; AM. PSYCHIATRIC ASS'N, *supra* note 37, at 309–29.

This history of distrust begins with hysteria in the fifth century, when the term was first used to refer to illnesses in women caused by the womb—which, at the time, was nearly every illness that could afflict a woman.[39] In the eighteenth century, this definition changed such that hysteria became a catch-all category for women's illnesses, particularly those thought to be psychiatric in origin.[40] This idea of a connection between women, their reproductive organs, and psychiatric illnesses stuck around through the nineteenth century[41] and was solidified in the twentieth century with the Freudian school of thought.[42] The significance of the history of hysteria for modern women is that the idea that women's illnesses and symptoms are tied to women's reproductive systems—or the "bikini medicine" approach[43]—and the idea that women's symptoms are more likely than men's to be psychological in origin are deeply ingrained in the history of the medical profession. Symptoms or illnesses that cannot be attributed to something under the "bikini" umbrella are likely to be categorized as "somatoform disorders," psychogenic illnesses, or "medically unexplained symptoms" (MUS), all of which are modern permutations of the age-old category of hysteria, used to imply that the patient's symptoms are psychological or otherwise 'not real.'[44]

The Diagnostic and Statistical Manual of Mental Disorders (DSM) describes these psychogenic illnesses as more common among women than men[45] and does not contain even a warning about ruling out other diagnoses before assigning a psychogenic explanation to a patient's symptoms, which Dr. Allen Frances, chair of the task force on the fourth edition of the DSM, warned could lead to widespread misdiagnoses—especially among women.[46] Dr. Frances was rightfully concerned. Psychogenic

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[39] *See* Helen King, *Once Upon a Text: Hysteria from Hippocrates*, *in* HYSTERIA BEYOND FREUD 3, 12–13 (Sander L. Gilman et al. eds., 1993).

[40] *See* RICHARD BLACKMORE, A TREATISE OF THE SPLEEN AND VAPOURS: OR, HYPOCHONDRIACAL AND HYSTERICAL AFFECTIONS 96–114 (1726).

[41] *See generally* Paul Chodoff, *Hysteria and Women*, 139 AM. J. PSYCHIATRY 546 (1982).

[42] *See* CARROLL SMITH-ROSENBERG, DISORDERLY CONDUCT: VISIONS OF GENDER IN VICTORIAN AMERICA 197 (1986).

[43] *See* Nanette K. Wenger, *You've Come a Long Way, Baby: Cardiovascular Health and Disease in Women: Problems and Prospects*, 109 CIRCULATION 558, 558 (2004).

[44] *See* Marks & Hunter, *supra* note 37, at 111; Edelberg, *supra* note 37, at 306–07.

[45] AM. PSYCHIATRIC ASS'N, *supra* note 37, at 309–29.

[46] *See* Frances, *supra* note 37, at f1581.

explanations have been called the "wastepaper basket of medicine"[47] because they are easy to use, they lack an objective test, and they are the only mental health diagnoses based not on symptomology but rather on speculation about cause.[48] Even more concerning is how quickly healthcare professionals can jump to such diagnoses; in one study, that was as quickly as thirty seconds to two minutes into an interaction with a patient, depending on whether the physician felt confused, irritated at the patient, or felt that the interaction with the patient was negative.[49] These psychogenic diagnoses become very 'sticky:' They shatter the credibility of a patient among other physicians because their medical file now says their symptoms are psychogenic.[50]

Unsurprisingly, this affects women's trust of medical professionals and the healthcare system.[51] Stories of women's unfortunate encounters with the healthcare system abound: It took Jackie ten years and many trips to specialists and the emergency room to finally be diagnosed with lupus.[52] It took Jen Brea, a young Harvard PhD student, numerous visits to rheumatologists, neurologists, psychiatrists, and various other specialists; a faulty diagnosis of conversion disorder—a psychogenic explanation for physical symptoms; and four years before she was finally diagnosed with myalgic encephalitis,

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[47] *See* ANGELA KENNEDY, AUTHORS OF OUR OWN MISFORTUNE? THE PROBLEMS WITH PSYCHOGENIC EXPLANATIONS FOR PHYSICAL ILLNESSES 17 (2012).

[48] *See generally* Laurie Endicott Thomas, *Are Your Patient's Medically Unexplained Symptoms Really 'All in Her Head'?*, 78 MED. HYPOTHESES 542 (2012).

[49] *See* Chaichana Nimnuan, Matthew Hotopf & Simon Wessely, *Medically Unexplained Symptoms: How Often and Why Are They Missed?*, 93 Q.J. MED. 21, 23, 25 (2000).

[50] *See, e.g.*, Diane O' Leary, *Re: The New Somatic Symptom Disorder in DSM-5 Risks Mislabeling Many People as Mentally Ill*, 346 BR. MED. J. f1580, f1580 (2013) ("A false positive diagnosis of somatic symptom disorder harms patients because it . . . subjects patients to stigma, inappropriate drugs, psychotherapy, and iatrogenic disease; disadvantages them in decisions relating to employment, education, and healthcare entitlements; skews their self perceptions [sic] and those of family and friends."); AM. AUTOIMMUNE RELATED DISEASES ASS'N, WOMEN & AUTOIMMUNITY, https://www.aarda.org/who-we-help/patients/women-and-autoimmunity/#1481574903922-68688035-6be6 [https://perma.cc/ZJ84-G7G4] ("Over 45% of autoimmune disease patients are labeled as 'chronic complainers' in early stages of their illness.").

[51] *See* Annie W. Lin et al., *Trust in Physicians and Medical Experience Beliefs Differ Between Women With and Without Polycystic Ovary Syndrome*, 2 J. ENDOCRINE SOC'Y 1001, 1001 (finding that women with polycystic ovary syndrome were significantly more distrustful of their primary care physicians than the general population).

[52] *See* Maya Dusenbery, *'Everybody Was Telling Me There Was Nothing Wrong'*, BBC FUTURE (May 29, 2018), https://www.bbc.com/future/article/20180523-how-gender-bias-affects-your-healthcare [https://perma.cc/EHB4-CKU7].

more popularly known as chronic fatigue syndrome.[53] Gila Lyons was told she was just suffering from anxiety before discovering that she had had a silverfish in her inner ear.[54] An unnamed woman with scleroderma was told her symptoms were "all in her head" before she was diagnosed, but not before she sustained such severe esophageal damage that she will never be able to eat again.[55] Another woman with ovarian cancer was told for three years that she was experiencing early menopause.[56] The list goes one. These women and their stories are the legacy of hysteria.

Women are still more vulnerable to gender-biased diagnosing and "medical psychologizing" than men.[57] They are more likely to receive psychogenic diagnoses[58] and to have their physical symptoms attributed to stress or anxiety,[59] even in the absence of any evidence of psychological illness or distress.[60] This, combined with the stereotype that women tend to seek medical attention for minor or frivolous concerns—a stereotype

[53] TED, *What Happens When You Have a Disease Doctors Can't Diagnose*, YOUTUBE (Jan. 17, 2017), https://www.youtube.com/watch?time_continue=1027&v=Fb3yp4uJhq0 [https://perma.cc/UZ5F-R659].

[54] Gila Lyons, *An Inch-Long Bug Lived in My Ear for Months, but My Doctor Dismissed it as Anxiety*, OPRAH MAG. (Nov. 28, 2018), https://www.oprahmag.com/life/health/a25251599/woman-bug-in-ear-anxiety-symptoms/ [https://perma.cc/SHU9-5T52].

[55] TED, *supra* note 53.

[56] *Id.*

[57] *See generally* Shari Munch, *Gender-Biased Diagnosing of Women's Medical Complaints: Contributions of Feminist Thought, 1970–1995*, 40 WOMEN & HEALTH 101 (2004) (describing the recent history of gender-biased diagnosing); *see also* Karen Armitage, Lawrence J. Schneiderman & Robert A. Bass, *Response of Physicians to Medical Complaints in Men and Women*, 241 J. AM. MED. ASSOC. 2186, 2186 (1979) (concluding that the "data tend to support the argument that male physicians take medical illness more seriously in men than in women").

[58] *See* Susan Wendell, *Old Women Out of Control: Some Thoughts on Aging, Ethics, and Psychosomatic Medicine*, *in* MOTHER TIME: WOMEN, AGING, AND ETHICS 133, 139–40 (Margaret U. Walker ed., 1999) ("[M]edically unexplained physical symptoms[] . . . [are] observed most frequently among women, individuals from non-Western or developing nations, [and] those from lower socioeconomic backgrounds.").

[59] *See* Nancy N. Maserejian et al., *Disparities in Physicians' Interpretations of Heart Disease Symptoms by Patient Gender: Results of a Video Vignette Factorial Experiment*, 18 J. WOMEN'S HEALTH 1661, 1661 (2009) (finding that physicians frequently and confidently diagnosed middle-aged women with psychological conditions and middle-aged men with heart disease based on the same symptomology).

[60] *See* JEROME GROOPMAN, HOW DOCTORS THINK 264–65 (2007) (explaining the cognitive biases that might prompt a physician to tell a patient nothing is wrong with them and the damage such a statement might do, given the stigma of psychological illness).

which has been disproven by research[61]—has led to the systematic discounting of women's symptoms and a pervasive distrust of women patients by their physicians. Medical students are still taught through medical school curricula, both implicitly and explicitly, that women are unreliable reporters of their own symptoms and are more likely to have psychological rather than "real," physical diseases.[62] Emergency room physicians are still trained on the job to "be on the look-out for hysterical females."[63] The trust gap is still alive and well in clinics and hospitals around the country, discouraging women from seeking medical attention for fear of being discounted and discouraging practitioners from taking their women patients seriously.

C. The Impact of Knowledge and Trust Gaps on Women's Quality of Care

When women's symptoms are not taken seriously and when women patients are subjected to often incorrect psychogenic explanations of their symptoms,[64] women patients as a group are left vulnerable to misdiagnosis, under-diagnosis, and to being stereotyped as mentally ill, making them less likely to ever receive a correct diagnosis.[65] Women patients are thus more likely to experience missed, delayed, or wrongful diagnoses, which are legally redressable claims under medical malpractice laws.

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[61] *See* Kate Hunt et al., *Do Women Consult More Than Men? A Review of Gender and Consultation for Back Pain and Headache,* 16 J. HEALTH SERVS. RES. & POL'Y 108, 108 (2011) (finding that evidence of women consulting medical professionals more frequently than men was "weak and inconsistent").

[62] As the first female dean of Harvard Medical School, Dr. Mary C. Howell, once noted: "[I]t is widely taught, both explicitly and implicitly, that women patients . . . are unreliable historians, and are beset by such emotionality that their symptoms are unlikely to reflect 'real' disease." Mary C. Howell, *What Medical Schools Teach About Women,* 291 NEW ENGLAND J. MED. 304, 304 (1974).

[63] Denise Dador, *'Medical Sexism': Women's Heart Disease Symptoms Often Dismissed*, ABC EYEWITNESS NEWS (Nov. 2, 2011), http://abc7.com/archive/8416664/ (last visited Nov. 23, 2019) (quoting cardiologist Dr. Adam Splaver saying, "In training, we were taught to be on the lookout for hysterical females who come to the emergency room").

[64] *See generally* Bruce L. Miller et al., *Misdiagnosis of Hysteria,* 34 AM. FAM. PHYSICIAN 157 (1986).

[65] *See* ELIZABETH A. KLONOFF & HOPE LANDRINE, PREVENTING MISDIAGNOSIS OF WOMEN: A GUIDE TO PHYSICAL DISORDERS THAT HAVE PSYCHIATRIC SYMPTOMS xxii (1997).

1. Discounting Pain

Accurate and prompt diagnosis usually requires believing a patient's report of their pain, but the trust gap suggests that women are often not afforded that luxury.[66] Across the board, this discounting of women's pain leads to more missed and delayed diagnoses. For instance, women experience longer delays in the emergency room before being treated for acute abdominal pain.[67] Women with endometriosis experience, on average, a ten-year delay between the onset of symptoms and receiving a diagnosis; because a surgical procedure is required to diagnose endometriosis, a physician must first be convinced that their patient's pain is more than just "bad cramps" to send such a patient for diagnostic surgery.[68] Moreover, about 61% of women who eventually get an endometriosis diagnosis are initially told by their healthcare providers that there is nothing wrong with them.[69]

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[66] *See* MARTIN PALL, EXPLAINING UNEXPLAINED ILLNESSES 190–91 ("Many psychogenic advocates have explained these multisystem illnesses [such as multiple chemical sensitivity and fibromyalgia] as being due to some kind of aberrant belief system . . . Typically, the illness belief is claimed to be due not only to the sufferer himself but also to . . . medical personnel who 'validate' the belief by diagnosing the illness."); *see also* Alison W. Rebman, Mark J Soloski & John N. Aucott, *Sex and Gender Impact Lyme Disease Immunopathology, Diagnosis and Treatment*, *in* SEX AND GENDER DIFFERENCES IN INFECTION AND TREATMENTS FOR INFECTIOUS DISEASES 337 (Sabra L. Klein & Craig W. Roberts eds., 2015); Reva C. Lawrence et al., *Estimates of the Prevalence of Arthritis and Other Rheumatic Conditions in the United States, Part II*, 58 ARTHRITIS & RHEUMATISM 26 (2008); Diane E. Hoffmann & Anita J. Tarzian, *The Girl Who Cried Pain: A Bias Against Women in the Treatment of Pain*, 29 J.L. MED. & ETHICS 13, 20 (2001) ("The subjective nature of pain requires health care providers to view the patient as a credible reporter . . . [and women are] more likely to have their pain reports discounted as 'emotional' or 'psychogenic' and, therefore, 'not real.'").

[67] *See* Ester H. Chen et al., *Gender Disparity in Analgesic Treatment of Emergency Department Patients with Acute Abdominal Pain*, 15 ACAD. EMERGENCY MED. 414, 416 (2008).

[68] *See* Ninet Sinaii et al., *High Rates of Autoimmune and Endocrine Disorders, Fibromyalgia, Chronic Fatigue Syndrome and Atopic Diseases Among Women with Endometriosis: A Survey Analysis*, 17 HUM. REPROD. 2715, 2720 (2002); Ruth Hadfield et al., *Delay in the Diagnosis of Endometriosis: A Survey of Women from the USA and the UK*, 11 HUM. REPROD. 878, 879 (1996) ("The considerable delay from the time of the initial occurrence of pain symptoms to the diagnosis of endometriosis was reported by women from both the USA and the UK, but the mean delay in diagnosis was significantly greater for the American women.").

[69] *See* Rebecca Greene et al., *Diagnostic Experience Among 4,334 Women Reporting Surgically Diagnosed Endometriosis*, 91 FERTILITY & STERILITY 32, 35; *see also* M. S. Arruda et al., *Time Elapsed from Onset of Symptoms to Diagnosis of Endometriosis in a Cohort Study of Brazilian Women*, 18 HUM. REPROD. 756, 758 (2003) ("The overall long delay in the present study to reach a diagnosis of endometriosis corroborates with a previous observation: 'Women frequently complain that the diagnosis was made only after months and

But perhaps the most unfortunate example of discounting women's pain is the diagnosis—or lack thereof—of early stage ovarian cancer. It was, until recently, widely believed that ovarian cancer has no symptoms until its later stages, when the five-year survival rate drops from 92% to 30%.[70] The truth, however, is that there are symptoms: bloating, pelvic or abdominal pain, difficulty eating, feeling full quickly, and urinary urgency or frequency.[71] Women with early stage ovarian cancer often have these symptoms prior to diagnosis,[72] but are frequently misdiagnosed with irritable bowel syndrome, urinary tract infections, or simply told that their symptoms are normal for menopausal women.[73] These symptoms were not recognized by the American Cancer Society, Gynecologic Cancer Foundation, or Society of Gynecologic Oncologists until 2007, when reliable data on the incidence of symptoms was published.[74]

Additionally, women who report symptoms of chronic pain conditions, which are the leading cause of long-term disability in the United States[75] and affect more women than men,[76] are likely to be told by their healthcare providers that their symptoms are "all in

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months of being fobbed off or ignored by doctors.'") (citing Stephen H. Kennedy, *What Is Important to the Patient with Endometriosis?*, 72 BRIT. J. CLINICAL PRAC. SUPPLEMENT 8 (1991)).

[70] *See* OVARIAN, FALLOPIAN TUBE, AND PERITONEAL CANCER: STATISTICS, www.cancer.net/cancer-types/ovarian-fallopian-tube-and-peritoneal-cancer/statistics [https://perma.cc/PD4U-C262].

[71] *See Soc'y Gynecologic Nurse Oncologists*, CANCER AWARENESS MONTH, https://www.sgno.org/outreach/cancer-awareness-month [https://perma.cc/8KDS-EGWE].

[72] *See* Lloyd H. Smith, *Early Clinical Detection of Ovarian Cancer: A Review of the Evidence*, 6 EXPERT REV. ANTICANCER THERAPY 1045, 1045 (2014) (finding that a third to half of patients with ovarian cancer report early stage symptoms).

[73] *See* DIAGNOSING OVARIAN CANCER, https://www.targetovariancancer.org.uk/health-professionals/gps/diagnosing-ovarian-cancer [https://perma.cc/EF8P-JLE4].

[74] *See generally Soc'y Gynecologic Nurse Oncologists*, *supra* note 71; IMAGINIS, CONSENSUS STATEMENT RELEASED ON OVARIAN CANCER SYMPTOMS, https://www.imaginis.com/ovarian-cancer-news/consensus-statement-released-on-ovarian-cancer-symptoms [https://perma.cc/A9W3-8X9K]; Barbara Goff et al., *Development of an Ovarian Cancer Symptom Index: Possibilities for Earlier Detection*, 109 CANCER 221 (2007).

[75] *See* INST. MED., RELIEVING PAIN IN AMERICA: A BLUEPRINT FOR TRANSFORMING PREVENTION, CARE, EDUCATION, AND RESEARCH 5, 89–90 (2011).

[76] *See* Jeffrey S. Mogil, *Sex Differences in Pain and Pain Inhibition: Multiple Explanations of a Controversial Phenomenon*, 13 NATURE REVS. NEUROSCIENCE 859, 859–61 (2012); INST. MED., *supra* note 75, at 89–90; MARY LOU BALLWEG ET AL., CAMPAIGN TO END CHRONIC PAIN IN WOMEN, CHRONIC PAIN IN WOMEN: NEGLECT, DISMISSAL AND DISCRIMINATION 4 (2010).

their heads," that they should learn to live with their pain, or that because they "look good," they must not be in as much pain as they allege.[77] In fact, the gender bias in trusting a patient's report of pain and symptoms is so ingrained in the medical community that female patients report making great efforts to balance assertiveness, emotionality, and appearances so that their pain will be taken seriously by practitioners.[78] This bias can severely affect women's quality of care and their likelihood of receiving a correct diagnosis.

2. Diagnostic Delays

Diagnostic delays can have a far-reaching impact, both emotionally and economically. Delays in diagnosing conditions causing disability may result in a patient being unable to claim federal protections to which they may otherwise be entitled under the Americans with Disabilities Act, which requires accommodations and equal treatment in the workplace,[79] and Social Security Disability Insurance.[80] For some diseases, delaying a diagnosis can allow tissue damage to worsen or become permanent, impact the odds of remission, and impact how expensive and intensive a patient's care will be if and when they are finally diagnosed.[81] Delays in diagnosis accompanied by messaging from healthcare professionals that the patient's symptoms are "all in their head" can also cause significant emotional and psychological distress for the patient.

The impact of diagnostic delays falls mainly on female patients, who experience longer delays than their male counterparts for nearly every illness.[82] These delays are

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[77] *See* Pat Anson, *Women in Pain Report Significant Gender Bias*, NAT'L PAIN REPORTS (Sept. 12, 2014), http://nationalpainreport.com/women-in-pain-report-significant-gender-bias-8824696.html [https://perma.cc/QVM3-CA4S].

[78] *See generally* Anne Werner & Kirsti Malterud, *It Is Hard Work Behaving as a Credible Patient: Encounters Between Women with Chronic Pain and Their Doctors*, 57 SOC. SCI. & MED. 1409 (2003); Thomas Hadjistavropoulos, Bruce McMurty & Kenneth D. Craig, *Beautiful Faces in Pain: Biases and Accuracy in the Perception of Pain*, 11 PSYCH. & HEALTH 411 (1996).

[79] 42 U.S.C. § 12111 (2018).

[80] 42 U.S.C. § 423 (2018).

[81] *See generally* Kristina Forslind, Ingiäld Hafstrom, & Monica Ahlmén, *Sex: A Major Predictor of Remission in Early Rheumatoid Arthritis?*, 66 ANNALS RHEUMATIC DISEASES 46 (2007).

[82] *See* BRAIN TUMOR CHARITY, FINDING MYSELF IN YOUR HANDS: THE REALITY OF BRAIN TUMOR TREATMENT AND CARE 6 (2016) ("[O]verall men who participated are more likely to have received a diagnosis in a shorter time period and with fewer visits to a doctor than women . . . suggest[ing] a worrying disparity between men

exacerbated by psychosomatic misdiagnoses, which women receive more often than their male counterparts,[83] and by a discounting of women's pain and other symptoms. For early detection of many diseases, a physician must first be concerned enough about the patient's symptoms to run the appropriate tests. Women experience longer delays in testing for many kinds of diseases, including brain, bladder, renal, and other cancers.[84] When there is a psychosomatic misdiagnosis in the way, testing and diagnosis can take even longer—up to fourteen times longer, depending on the disease.[85]

3. Frequent Misdiagnoses

Even when women patients do receive appropriate testing and physical examination, they receive less intense screening and treatment than their male counterparts,[86] despite being equally vulnerable to the top three causes of death—heart disease, stroke, and cancer—as men.[87] The knowledge gap means that healthcare professionals may make assumptions about what diseases are more likely in women and about how certain diseases present symptomatically based on their knowledge about the "male model" of medicine. The trust gap means healthcare professionals may trust their ideas of the "male model" more than they trust their women patients' reports of their own symptoms. For instance, women have different symptoms and risk factors for heart attacks than men and

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and women in the speed and ease of obtaining a diagnosis."); *see generally* Benjamin Bleicken et al., *Delayed Diagnosis of Adrenal Insufficiency Is Common: A Cross-Sectional Study in 216 Patients*, 339 AM. J. MED. SCI. 525 (2010); ANNA KOLE & FRANCOIS FAURISSON, THE VOICE OF 12,000 PATIENTS: EXPERIENCES AND EXPECTATIONS OF RARE DISEASE PATIENTS ON DIAGNOSIS AND CARE IN EUROPE (2009); E. Purinszky & O. Palm, *Women with Early Rheumatoid Arthritis are Referred Later Than Men*, 64 ANNALS RHEUMATIC DISEASES 1227 (2005).

[83] *See* Netta Levin, Michal Mor & Tamir Ben-Hur, *Patterns of Misdiagnosis of Multiple Sclerosis*, 5 ISRAELI MED. ASS'N J. 489, 490 (2003).

[84] *See* BRAIN TUMOR CHARITY, *supra* note 82; Nafees U. Din, *Age and Gender Variations in Cancer Diagnostic Intervals in 15 Cancers: Analysis of Data from the UK Clinical Practice Research Datalink*, 10 PLOS ONE e0127717, 7 (2015); Georgios Lyratzopoulos et al., *Gender Inequalities in the Promptness of Diagnosis of Bladder and Renal Cancer After Symptomatic Presentation: Evidence from Secondary Analysis of an English Primary Care Audit Survey*, 3 BRIT. MED. J. OPEN e002861, 6 (2013).

[85] *See* KOLE & FAURISSON, supra note 82, at 48.

[86] *See* Markus Bönte et al., *Women and Men with Coronary Heart Disease in Three Countries: Are They Treated Differently?*, 18 WOMEN'S HEALTH ISSUES 191, 195 (2008).

[87] *See* Wenger, *supra* note 43, at 558; Luke K. Kim et al., *Sex-Based Disparities in Incidence, Treatment, and Outcomes of Cardiac Arrest in the United States, 2003-2012*, 5 J. AM. HEART ASS'N e003704, 1 (2016).

the typical test for heart attacks is less accurate for women than men.[88] Due to the knowledge gap, physicians are more likely to miss heart attacks in women because they tend to present differently and don't always correspond to the "male model" of the heart attack.[89] However, even among patients who present with the typical "male model" heart attack symptoms, there is a higher mortality rate among women than among men,[90] potentially because women's pain is taken less seriously than men's and their typical heart attack symptoms, like chest pain, may be dismissed as anxiety. This suggests that the trust gap plays a significant role independent from the knowledge gap.

The outcome of the interaction of the knowledge and trust gaps is that women are more likely to be misdiagnosed for illnesses stereotyped as "men's diseases," such as stroke,[91] chronic obstructive pulmonary disorder,[92] and heart attacks,[93] even though these stereotypes are often inaccurate.[94] Conversely, women patients are likely to be under-diagnosed for illnesses which share symptoms with any aspect of the reproductive system, whether it be menstruation, pregnancy, motherhood, or menopause. Many illnesses are likely to be misdiagnosed if they share any symptoms with menopause, like

[88] *See* Laxmi Mehta et al., *Acute Myocardial Infarction in Women: A Scientific Statement From the American Heart Association*, 133 CIRCULATION 916, 922–23 (2016); Anoop S. V. Shah et al., *High Sensitivity Cardiac Troponin and the Under-Diagnosis of Myocardial Infarction in Women: Prospective Cohort Study*, 350 BRIT. MED. J. g7873, 1 (2015); Lori Mosca et al., *Fifteen-Year Trends in Awareness of Heart Disease in Women: Results of a 2012 American Heart Association National Survey*, 127 CIRCULATION 1254, 1258 (2013).

[89] *See* John G. Canto, *Association of Age and Sex with Myocardial Infarction Symptom Presentation and In-Hospital Mortality*, 307 JAMA 813, 817 (2012) (finding that men, and especially men who presented with chest pain, were significantly more likely to be treated for heart attacks than women, who more often presented without chest pain).

[90] *See* Judith H. Lichtman et al., *Symptom Recognition and Healthcare Experiences of Young Women with Acute Myocardial Infarction*, 8 CIRCULATION: CARDIOVASCULAR QUALITY & OUTCOMES S31, S35 (2016).

[91] *See* Newman-Toker et al., *supra* note 3, at 166 (finding that women's strokes are more frequently misdiagnosed than men's).

[92] *See generally* Kenneth R. Chapman, Donald P. Tashkin, & David J. Pye, *Gender Bias in the Diagnosis of COPD*, 119 CHEST J. 1691 (2001).

[93] *See* J. Hector Pope et al., *Missed Diagnoses of Acute Cardiac Ischemia in the Emergency Department*, 342 NEW ENG. J. MED. 1163, 1168 (2000).

[94] *See* MeiLan K. Han et al., *Gender and Chronic Obstructive Pulmonary Disease*, 176 AM. J. RESPIRATORY & CRITICAL CARE MED. 1179, 1179 (2007) (stating that more women than men die of COPD each year).

hot flashes in non-Hodgkin lymphoma,[95] or present with abdominal pain misconstrued as menopause or menstrual cramps, like uterine, colon, and bladder cancers.[96] The upshot is that women experience wrong, delayed, and missed diagnoses for all kinds of diseases, across the board.

4. Intersectionality and Impact

It is important to note that gender interacts with other factors like race, socioeconomic status, age, and weight, among others. For instance, that healthcare professionals tend to underestimate black patients' pain is widely documented.[97] Women who are able to get diagnoses for illnesses such as chronic pain conditions, which are difficult to diagnose and which present with symptoms that healthcare professionals are especially likely to dismiss as trivial or psychosomatic, tend to be white and of higher socioeconomic status, having the resources to find a specialist who can diagnose their condition.[98] Many treatable conditions like Alzheimer's, which is more prevalent in women, are often diagnosed late because symptoms are too casually dismissed as 'normal' signs of aging.[99] Women are also more likely than men to be wrongfully told their symptoms are a result of being overweight; women are more likely to be advised to lose weight by their physicians[100] and are advised to do so at smaller amounts of

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[95] *See* Angela Epstein, *Do You Suffer from Night Sweats? Don't Blame the Menopause Just Yet: After Being Misdiagnosed by Doctors for Two Years, Wendy Discovered She Had Cancer*, DAILY MAIL (Dec. 3, 2016), www.dailymail.co.uk/health/article-4002952/Do-suffer-night-sweats-Don-t-blame-menopause-just-misdiagnosed-doctors-two-years-Wendy-discovered-cancer.html [https://perma.cc/2YN7-7Z63].

[96] *See* DUSENBERY, DOING HARM, *supra* note 4, at 248; *see also* Julissa Catalan (as told to), *Doctors Told Me My Uterine Cancer Was Menopause*, PREVENTION (June 7, 2016), www.prevention.com/health/doctors-told-me-my-uterine-cancer-was-menopause [https://perma.cc/9HSJ-B58G].

[97] *See* Kelly M. Hoffman et al., *Racial Bias in Pain Assessment and Treatment Recommendations, and False Beliefs About Biological Differences Between Blacks and Whites*, 113 PROCEEDINGS NAT'L ACAD. SCI. 4296, 4300 (2016); Salimah H. Meghani, Eeeseung Byun, & Rollin Gallagher, *Time to Take Stock: A Meta-Analysis and Systematic Review of Analgesic Treatment Disparities for Pain in the United States*, 13 PAIN MED. 150, 159 (2012).

[98] *See* Sandra H. Berry et al., *Prevalence of Symptoms of Bladder Pain Syndrome/Interstitial Cystitis Among Adult Females in the United States*, 186 J. UROLOGY 540, 544 (2011).

[99] *See* Karin M. Ouchida & Mark S. Lachs, *Not for Doctors Only: Ageism in Healthcare*, AGEBLOG (2015), www.asaging.org/blog/not-doctors-only-ageism-healthcare [https://perma.cc/ACK5-SK3M].

[100] *See* Caitlin Anderson et al., *Weight Loss and Gender: An Examination of Physician Attitudes*, 9 OBESITY 257, 260–61 (2001); Christopher M. Sciamanna et al., *Who Reports Receiving Advice to Lose Weight? Results from a Multistate Survey*, 160 ARCHIVES INTERN. MED. 2334, 2338 (2000).

'overweight' than men[101] even though overweight women are more likely than overweight men to be metabolically healthy.[102] With any of these intersectional identities, as well as other identities not discussed here, "doctors too often can't see past some aspect of the patient's identity that's considered somehow inherently abnormal," so their symptoms are likely to be misattributed to that 'abnormal' identity.[103]

II. Medical Malpractice Law as a Recourse

Medical malpractice law has been established as an avenue for patients who experience medical error to seek justice. This is an important option for patients who have been seriously impacted by medical error. Diagnostic error is the most common type of malpractice allegation[104] and the Institute of Medicine estimates the annual cost of medical errors in hospitals to be between $17 and $29 billion.[105] The costs of medical malpractice suits, on the other hand, while they affect the cost of doctors' and hospitals' malpractice insurance premiums, do not significantly raise healthcare costs.[106] This suggests that medical malpractice lawsuits are an economically efficient way for individual plaintiffs to distribute the costs of medical error; the economic impact of such an error on one plaintiff may be catastrophic,[107] but they are not so burdensome when

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[101] *See* DUSENBERY, DOING HARM, *supra* note 4, at 244. On average, women are advised to lose weight when they are as little as thirteen pounds overweight while men are not advised to lose weight until they are sixty-eight pounds overweight. *Id.*; *see also* Rebecca M. Puhl, Tatiana Andreyeva & Kelly D. Brownell, *Perceptions of Weight Discrimination in America*, 32 INT'L J. OBESITY 992, 998 (2008) (finding that women experience more weight discrimination than men).

[102] *See* Catherine M. Phillips et al., *Defining Metabolically Healthy Obesity: Role of Dietary and Lifestyle Factors*, 8 PLOS ONE e76188, 6 (2013).

[103] *See* DUSENBERY, DOING HARM, *supra* note 4, at 243.

[104] Diagnostic error accounts for 31.8% of all medical malpractice allegations in the National Practitioner Data Bank. Adam C. Schaffer et al., *Rates and Characteristics of Paid Malpractice Claims Among US Physicians by Specialty, 1992-2014*, 177 JAMA INTERN. MED. 710, 710 (2017).

[105] This includes disability and health care costs, lost income, lost productivity, and other costs of care. *See* PUBLIC CITIZEN: CONGRESS WATCH, MEDICAL MISDIAGNOSIS: CHALLENGING THE MALPRACTICE CLAIMS OF THE DOCTORS' LOBBY 1 (2003).

[106] *See* FURROW ET AL., supra note 7, at 506.

[107] *See generally* Benjamin D. Sommers, Atul Gawande & Katherine Baicker, *Health Insurance Coverage and Health—What the Recent Evidence Tells Us*, 377 NEW ENG. J. MED. 586 (2017) (explaining the negative economic impact healthcare costs can have on individual patients). Medical error adds to already burdensome healthcare costs by requiring additional medical visits to correct medical errors.

shifted through the insurance system. Given that medical error is the third leading cause of death in the United States,[108] it is crucial that we maintain an effective system for patients and their families and caretakers to recoup these catastrophic costs.

A. An Overview of Medical Malpractice Law

Each state has its own specific medical malpractice laws, but generally, in order to prevail in a medical malpractice case, a plaintiff must establish: (1) that the practitioner had a duty to the plaintiff, meaning the practitioner had undertaken a professional service to the patient; (2) that the practitioner breached that duty by providing service that was below the acceptable standard of care; (3) that the plaintiff experienced injury; and (4) that the practitioner's breach of duty directly caused the plaintiff's injury.[109] The focus of this study is on the second factor: that the practitioner violated the standard of care.

The standard of care has evolved over time. At first, American courts used an evidentiary proof standard which required a plaintiff to present an expert witness from the same locality as the defendant to testify regarding current standard medical practice in that locality,[110] otherwise known as the locality rule. The locality rule dealt with differences among physicians in their education and training, since medical school curricula were not yet standardized, and in the resources and technology available to them.[111] However, the locality rule allowed physicians to set a standard for themselves within their own profession, and it allowed physicians in small communities who knew one another to avoid testifying against each other and thereby escape liability.[112] Then, in 1832, the Connecticut Supreme Court in *Landon v. Humphrey* coined the language that American courts now universally use to assess malpractice claims: A lack of "ordinary

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108 *See* FURROW ET AL., *supra* note 7, at 507; *see also* Martin A. Makary & Michael Daniel, *Medical Error—The Third Leading Cause of Death in the U.S.*, 353 BRIT. MED. J. 2139 (2016).

109 *See* Barry A. Lindahl, *Elements of Medical Malpractice Claim*, *in* 3 MODERN TORT LAW: LIABILITY & LITIGATION § 24:1 (2d ed.). *See generally*, Ellsworth v. United States, No. CV-16-08150-PCT-DLR, 2018 WL 1784687 (D. Ariz. Apr. 13, 2018); Watson by Leonard v. West Suburban Medical Center, 103 N.E.3d 895 (Ill. App. Ct. 2018).

110 *See* Slater v. Baker & Stapleton (1767) 95 Eng. Rep. 860.

111 *See generally* STEVEN NEHMER, THE NEW JERSEY MEDICAL MALPRACTICE LIABILITY INSURANCE CRISIS OF 2002 3, 21 (2005); Allen D. Spiegel & Florence Kavaler, *America's First Medical Malpractice Crisis, 1835-1865*, 22 J. COMMUNITY HEALTH 283 (1997).

112 *See* Leonard Berlin, *Radiologic Malpractice Litigation: A View of the Past, a Gaze at the Present, a Glimpse of the Future*, 181 AM. J. ROENTGENOLOGY 1481, 1482–83 (2003).

diligence" on the practitioner's part entitles an injured plaintiff to recover.[113] The term "ordinary diligence," without reference to local custom or practice, along with the establishment of the American Medical Association in 1847 and the resulting increased standardization of the medical field, prompted states to begin shifting their legal standards to a national rather than a locality rule.[114]

At the same time, medical malpractice litigation was becoming more frequent and case law slowly helped establish some regulations for a poorly regulated profession.[115] As medical malpractice litigation flourished and as most states began using a national rather than locality rule, practitioner liability expanded and practitioners began practicing defensive medicine—ordering more tests and more expensive screening to avoid later claims that they did not exercise due care.[116] Two recent studies found that between 73%[117] and 93% of private practitioners in the United States admitted to practicing defensive medicine for fear of litigation despite the fact that medical error must be negligent in order for a plaintiff to recover at law,[118] as measured against what "an ordinarily prudent physician would do under the same or similar circumstances."[119]

Now, in most states, violating the standard of care means a practitioner's medical service was substandard as measured against a national "accepted medical practice"

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113 9 Conn. 209 (1832), *overruled in part by Crosby v. Fitch*, 12 Conn. 410 (1838).

114 *Id.*

115 *See* Robert I. Field, *The Malpractice Crisis Turns 175: What Lessons Does History Hold for Reform?*, 4 DREXEL U.L. REV. 7, 11–12 (2011).

116 *See* Sonal Sekhar Miraj & Navya Vyas, *Defensive Medicine: A Bane to Healthcare*, 3 ANNALS MED. & HEALTH SCI. RES. 295, 295 (2013).

117 *Id.*

118 JACKSON HEALTHCARE, PHYSICIAN STUDY: QUANTIFYING THE COST OF DEFENSIVE MEDICINE, https://jacksonhealthcare.com/media-room/surveys/defensive-medicine-study-2010/ [https://perma.cc/5S2L-AYSE] ("Fear of litigation has been cited as the driving force behind defensive medicine. Defensive medicine is especially common in the United States of America, with rates as high as 79% to 93%, particularly in emergency medicine, obstetrics, and other high-risk specialties.").

119 *See* Apodaca v. Miller, 281 S.W.3d 123 (Tex. Ct. App. 2008); Moore v. Sutherland, 107 S.W.3d 786 (Tex. Ct. App. 2003).

benchmark.[120] While plaintiffs are still required to provide an expert to testify as to the standard of care in a particular case, and the defendant practitioner may also offer an expert witness,[121] plaintiffs can use an expert of the same specialty as the defendant from anywhere in the country.[122] However, a minority of states still use the locality rule, where experts need only testify to what a practitioner in that community should have done in similar circumstances.[123] Moreover, even in states with a national rule, medical malpractice standards are largely protective of physicians. Practitioners need only be "minimally competent," and a plaintiff's expert must be able to testify that the defendant's actions fell below that minimal standard, not just below an optimal standard of care.[124]

B. The Gendered Impact of Medical Malpractice Law

As it currently stands, the legal standard for medical malpractice may not equally protect male and female patients. As stated in the seminal case *McCourt v. Abernathy*, "generally qualified physicians may differ as to what constitutes a preferable course of treatment. Such differences due to preference . . . do not amount to malpractice."[125] Because knowledge in the medical community about "female-pattern" symptom presentations for "male diseases"[126] and about illnesses that predominantly affect women is spotty at best,[127] and because the trust gap is so pervasive, the "minimally competent" practitioner may not be aware of recent developments in knowledge about women's health and may not give much weight to women's reports of their symptoms. Listening to

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[120] *See* Faicco v. Golub, 938 N.Y.S.2d 105, 106 (App. Div. 2012).

[121] *See* PETER P. BUDETTI & TERESA M. WATERS, MEDICAL MALPRACTICE LAW IN THE UNITED STATES 2–3 (Henry J. Kaiser Fam. Found. ed., 2005).

[122] *See* Hall v. Hilbun, 466 So. 2d 856, 866 (Miss. 1985).

[123] *See* BUDETTI & WATERS, *supra* note 121, at 6.

[124] *See* Peter Moffett & Gregory Moore, *The Standard of Care: Legal History and Definitions: The Bad and Good News*, 12 W.J. EMERGENCY MED. 109, 112 (2011).

[125] McCourt ex rel. McCourt v. Abernathy, 318 S.C. 301, 307 (1995).

[126] *See* TEDxWomen, *The Single Biggest Health Threat Women Face*, TED (Dec. 2011), https://www.ted.com/talks/noel_bairey_merz_the_single_biggest_health_threat_women_face?language=en [https://perma.cc/SGF2-JJU5].

[127] *See* Stephen Silberstein, *quoted in* Joanna Kempner, NOT TONIGHT: MIGRAINE AND THE POLITICS OF GENDER AND HEALTH 12 (2014); Pamela Weintraub, CURE UNKNOWN: INSIDE THE LYME EPIDEMIC 66 (2013).

and trusting women patients should be part of a minimal standard of care, but in the current state of medical malpractice law, such distrust likely is not a deviation from the basic standard of care as long as a practitioner takes what most "ordinary" practitioners would deem to be reasonable action in response to their women patients. As such, women patients alleging missed, wrong, or delayed diagnoses may have more difficulty than their male counterparts in bringing and prevailing in medical malpractice suits.

However, the scope of legal protections for patients against gender discrimination in the medical setting may change in the near future. The Patient Protection and Affordable Care Act (ACA), passed in 2010,[128] included a provision[129] prohibiting discrimination in health programs based on four existing civil rights laws, including Title IX of the Education Amendments of 1972.[130] In 2016, the Department of Health and Human Services (HHS) issued a rule interpreting this provision as prohibiting discrimination in healthcare on the basis of sex stereotypes, gender identity, and pregnancy-related conditions.[131] A few months later, though, Judge O'Connor of the Northern District of Texas issued a nation-wide preliminary injunction on the HHS rule in *Franciscan Alliance v. Burwell*, holding that the HHS rule's inclusive definition of "sex" likely exceeded HHS's authority as granted by Congress in the ACA and that the rule likely violated plaintiffs' religious liberties as protected by the Religious Freedom Restoration Act.[132] Following this ruling, the Attorney General withdrew the Department of Justice's guidance regarding the use of the word "sex" in Title IX and its implications for discrimination, which restricted the authority of Title IX as cited by the HHS in its earlier 2016 rule.[133] This renders the expanded gender protections of the ACA and the 2016 HHS rule essentially toothless as applied to the healthcare context, but future litigation or changes in the executive branch may further the ACA's goal of protection against discrimination.

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[128] *See* 42 U.S.C. § 18001 et seq. (2018).

[129] *See* 42 U.S.C. § 18116 (2018).

[130] *See* 20 U.S.C. § 1681 et seq. (2018).

[131] *See* 81 Fed. Reg. 31,375 (May 18, 2016).

[132] 227 F. Supp. 3d 660, 695 (N.D. Tex. 2016).

[133] *See* Press Release, Dep't of Justice, Press Release 17-214, Statement by Attorney General Jeff Sessions on the Withdrawal of Title IX Guidance (Feb. 22, 2017) (on file with the U.S. Department of Justice).

For now, the legal ramifications of the trust gap are still very much in effect. Take, for instance, the case of *Wilburn v. Cleveland Psychiatric Institute*.[134] When Edna Wilburn experienced her first stroke, her attending practitioners did not complete the standard stroke protocol despite Edna's exhibition of standard stroke symptoms.[135] Instead, a hospital psychiatrist determined that Edna must be "suffering from conversion reaction disorder, a mental illness causing physical impairment without any organic basis."[136] After Edna's second stroke and return to the hospital, she was again diagnosed with conversion disorder and referred for inpatient psychiatric care, although this time her physician indicated further neurological testing was necessary.[137] But Edna's inpatient psychiatric institute did not follow through on this testing despite a worsening of symptoms. Edna was misdiagnosed with severe depression and later released for outpatient care.[138] After her release, Edna suffered a third severe and disabling stroke, after which she was finally diagnosed with a rare blood disorder that causes strokes.[139] Edna won her case at the trial court, but the court of appeals reversed, holding that the appropriate issue to consider was whether the defendants violated the standard of care in failing to rule out conversion disorder rather than failing to diagnose Edna's blood disorder.[140] The implication of the court was that even if the practitioners violated the standard of care by not ruling out conversion disorder, they may not have correctly diagnosed Edna's blood disorder and prevented subsequent strokes, and thus the practitioners' error would not have proximately caused Edna's damages. The court seemingly ignored the fact that the practitioners' original diagnosis of conversion order stigmatized Edna and delayed testing and treatment that could have, at minimum, treated the worsening symptoms of her strokes, if not their underlying cause.

Unfortunately, Edna is not alone. In *Pleasants v. Alliance Corp.*, a teenage girl who presented in the emergency room with severe abdominal pain was released within two

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[134] 743 N.E.2d 515 (Ohio Ct. App. 2000).

[135] *Id.* at 516.

[136] *Id.*

[137] *Id.*

[138] *Id.*

[139] *Id.*

[140] *Wilburn*, 743 N.E.2d at 519.

hours to die at home from cardiac arrest induced by severe stomach infection.[141] Her attending physician, underestimating her pain, assumed run-of-the-mill gastroenteritis, a swelling of the lining of the stomach and intestines.[142] The infection that killed the decedent was rare, as was Edna's blood disorder,[143] but the plaintiffs in *Pleasants* did not allege that the defendant's deviation from the standard of care was in failing to diagnose this infection right away; rather, plaintiffs alleged that the violation of the standard of care was in discharging the decedent rather than taking her symptoms seriously and keeping her for observation.[144] Nonetheless, plaintiffs did not prevail on this issue, as the court held that the jury reasonably concluded the physician took appropriate actions based on the "multiple methods of treatment" available for the symptoms with which the patient presented.[145] Similarly, in *Evers v. Dollinger*, the trial court granted summary judgment for a physician who told his female patient to "stop worrying and go home and relax," failing to diagnose her breast cancer before it metastasized.[146] While *Evers* was overturned on appeal,[147] the majority of patients and plaintiffs do not have the time and resources to pursue an appeal.

C. Uncertainty of Assessing Gender Bias in Medical Malpractice Cases

Cases like *Wilburn*, *Pleasants*, and *Evers* are present across states and over time, but it should be noted that it is difficult to assess how commonplace such analyses as that in Edna's case are. There are often other dispositive issues on which the court makes its decision and therefore the impact of gender bias on the final outcome is variable, depending on the number and complexity of issues of law present in a given case. For instance, in *Russo v. Phoenix Internal Medicine Associates, PC*, the defendants failed to diagnose the decedent with a heart infection, instead minimizing and misattributing her symptoms to complications due to asthma.[148] The ruling in *Russo*, though, hinged on the

[141] 209 W. Va. 39, 41 (2000).

[142] *Id.*

[143] *Wilburn*, 743 N.E.2d at 516.

[144] *Pleasants*, 209 W. Va. at 42.

[145] *Id.* at 47–48.

[146] 95 N.J. 399, 402 (1984).

[147] *Id.*

[148] 950 A.2d 559, 561 (Conn. App. Ct. 2008).

validity of the plaintiff's expert testimony, so the court never reached the issue of defendants' violation of the standard of care.[149] It is unclear how the issue of deviation from the standard of care would have been assessed by the court.

It is also possible that cases which reach a jury—a small minority of medical malpractice cases[150]—may be more likely to achieve justice for women patients. A balanced jury, women among them, may be more trusting of or more sympathetic towards women patients who have been unjustly discounted or distrusted in ways that led to their medical injuries. However, the available data on whether judges and juries differ in the damage awards they dole out to plaintiffs is contradictory.[151] Moreover, jury verdicts in medical malpractice cases typically receive significant cuts after trial, meaning plaintiffs receive less than they were originally awarded.[152]

Thus, given the high degree of variability in medical malpractice cases, an aggregate analysis of case outcomes by gender is necessary to shed light on the potential large-scale impact of the knowledge and trust gaps on legal avenues for patient recourse. It is important to note, though, that there is an intermediate step in which the knowledge and trust gaps may also come into play. After a patient experiences malpractice, their likelihood of obtaining adequate representation depends on the value of their case. There is a significant subset of patients who experience medical malpractice but who have difficulty bringing suit because the economic value of their case may not be sufficient to attract the attention of a lawyer due to the patient's age, as damages are often calculated in terms of lost future wages or productivity, or due to the lesser economic impact of the

[149] *Id.* at 566.

[150] Only about 4% of malpractice cases filed in federal district courts reach a verdict; nearly a quarter are settled. Medical Malpractice Litigation Analytics, WESTLAW EDGE, https://1.next.westlaw.com/ (follow "Litigation Analytics" link; then search for "medical malpractice," then select "medical" hyperlink under types of cases).

[151] *See* Theodore Eisenberg & Michael Heise, *Judge-Jury Difference in Punitive Damages Awards: Who Listens to the Supreme Court?*, 8 J. EMPIRICAL LEGAL STUD. 325, 325 (2011) (finding significant differences between the damages amounts awarded by judges and juries). *Cf.* Theodore Eisenberg et al., *Juries, Judges, and Punitive Damages: An Empirical Study*, 87 CORNELL L. REV. 743, 779 (2002) (finding no significant difference between damages awarded by judges and juries).

[152] *See* David A. Hyman et al., *Do Defendants Pay What Juries Award? Post-Verdict Haircuts in Texas Medical Malpractice Cases, 1988–2003*, 4 J. EMPIRICAL LEGAL STUD. 3, 3 (2007).

damage caused by the malpractice.[153] Women and the elderly bear the brunt of this difficulty in attracting lawyers' attention.[154] That is to say, the impact of the knowledge and trust gaps on patients' access to legal justice is likely larger than what is visible in the outcome of cases which are filed and pursued.

III. An Empirical Aggregate Analysis of Gender Bias in Medical Malpractice Lawsuits for Delayed, Wrongful, or Missed Diagnoses

The present study was designed to assess whether there is a gendered difference in the outcomes of medical malpractice suits alleging wrongful or missed diagnoses, given women's historical underrepresentation in medical studies, the distrust of women patients in the medical setting, and the legal standard for medical malpractice suits. As discussed in Part II.A., the largest centralized, publicly accessible database of medical malpractice lawsuits is the National Practitioner Data Bank (NPDB), which collects data on payments made to patients alleging medical malpractice. The present study used NPDB data to assess:

1. Whether there is a gendered difference in the average recovery amount for medical malpractice plaintiffs alleging delayed, wrong, or missed diagnoses;
2. Whether such a gender gap, if present, varies by the age of the patient;
3. Whether such a gender gap, if present, varies by the patient's health outcome as a result of the alleged malpractice;
4. Whether such a gender gap, if present, varies by the state in which the patient accessed their medical care, based on that state's economic, legal, and public health landscape;
5. And whether such a gender gap, if present, has changed over time, along with the accumulation of knowledge about women's health.

A. Data Collection

The dataset analyzed in this study, hereinafter referred to as the compiled dataset, was based on NPDB data and supplemented with data from other sources, all of which are accessible online by the general public. NPDB data was used because, according to the Code of Federal Regulations, any entity paying a judgment or settlement on behalf of

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153 Marshall Allen & Olga Pierce, *Ten Patient Stories: When Attorneys Refused My Medical Malpractice Case*, PROPUBLICA (Jan. 9, 2014), https://www.propublica.org/article/ten-patient-stories-when-attorneys-refused-my-medical-malpractice-case [https://perma.cc/EZ6M-TF4U].

154 *Id.*

a practitioner in a medical malpractice lawsuit must report that payment, along with other information, to the NPDB.[155] This database is therefore large, centralized, and reliable. The compiled dataset contains 47,293 observations, each of which represents a case reported to the NPDB for which a payment was made on behalf of a practitioner to a plaintiff between 2004 and 2018. Supplemental data was then collected from various sources to account for contextual variables that may have an influence on the relationship between patient gender and recovery amounts in medical malpractice suits alleging missed, delayed, or wrongful diagnoses. Supplemental data was collected from the Centers for Disease Control Interactive Atlas of Heart Disease and Stroke Tables, the Kaiser Family Foundation's State Profiles for Women's Health, the Courtroom Statistics Project, Gallup, the U.S. Decennial Census, and the American Community Surveys. Supplemental data was then mapped onto the NPDB data, forming the complete compiled dataset.

The final addition to the compiled dataset was an index representing how receptive a particular state's court system is to medical malpractice lawsuits. This index was constructed based on state statutes. States were given a score on the index based on the statute of limitations for medical malpractice suits; whether the state currently has, or had at any point between 2004 and 2018, a cap on damages and, if so, whether the cap is for noneconomic damages only or for total damages; and whether the state currently uses a locality rule or used a locality rule at any point between 2004 and 2018.

STATA software was used to analyze the compiled dataset. **Table 1** below presents detailed information about the distribution of all variables in the compiled dataset. Note that each observation represents an individual plaintiff's case. Also note that recovery amount and state population are logged variables which use the natural log of the amount which the plaintiff was paid and the state population, respectively, which limits the effect of extreme values on regression estimates. In the table below, the abbreviation "obs." is used to refer to observations, or the number of cases in the NPDB for which a particular variable is available, and the abbreviation "std. dev." is used to refer to standard deviation, or the amount of variation in the data set.

[155] Reporting Medical Malpractice Payments, 45 C.F.R. § 60.7 (2019).

Table 1. Descriptive Statistics of Sample

Variable	Obs.	Mean	Std. Dev.	Min	Max
Case Characteristics					
Patient age	46,032	42.08136	18.43256	1	90
Patient gender *Female = 1; Male = 2*	47,293	1.477343	0.4994917	1	2
Patient health outcome *Categories of injury scaled from 1, least serious, to 4, death*	46,905	3.060761	0.9409799	1	4
Duration of case, in years	47,293	5.044298	2.777423	0	105
Total payment to plaintiff	47,293	361,326.9	482,729	50	22,500,000
Total payment (logged)	47,293	12.12139	1.325691	3.912023	16.92903
Year of settlement or judgment	47,293	2010.229	4.234526	2004	2018
Case settled or went to judgment *Judgment = 1; Settlement = 2*	47,293	1.977502	0.1482982	1	2
Type of misdiagnosis alleged *Diagnoses allegations categorized as missed, 1, wrongful, 2, or delayed, 3*	47,293	145.1765	64.36294	1	3
Practitioner Characteristics					
Practitioner age	47,149	44.77804	11.03455	10	80
Year of professional school graduation	47,293	1979.025	12.38468	1910	2010
Practitioner field of license	47,293	1.145032	0.4808835	1	4
State Characteristics					
State *Numbered in alphabetical order*	47,293	25.88603	13.51809	1	51
State congeniality index	47,293	8.911721	1.512993	5	13
Population	28,201	1.37e+07	9,856,671	514,044	38,800,000
Population (logged)	28,201	16.13034	0.8602984	13.15006	17.4729
Percent Black	28,201	12.73307	7.453612	0.45	55.5
Percent Hispanic	28,201	15.2274	11.40427	0.99	47.67
Percent aged 65+	28,201	13.49496	2.016766	6.65	19.06
Percent female aged 65+	28,201	15.22707	2.120337	7.38	20.54
Percent urban	28,201	81.56247	11.46776	38.2	100
Civil caseload per 100k residents	5,547	5,307.5	2,552.08	1,874.834	17,654.39
Medical malpractice caseload per 100k residents	1,992	106.0112	591.441	1.45895	3,682.4
Medical malpractice jury trial rate	2,574	0.049033	0.022836	0	0.19587629
Percent lacking health insurance	3,694	11.85003	3.829458	3	20
Female cardiac incident death rate	28,201	210.4925	30.25709	40.5	316.9
Female preventable death rate	28,201	42.43126	9.285987	19.2	86.5
Gini coefficient	28,201	0.4670634	0.0195129	0.406	0.543
Per capita income	28,201	31091.86	4142.548	21,494	49,213.18
Political affiliation (by majority) *Democratic = 1; Republican = 2*	37,556	1.70974	0.4538883	1	2

B. Results

Analysis of the compiled dataset revealed that patient gender impacts recovery amounts in diagnosis-related medical malpractice cases. More specifically, patient gender interacts with contextual factors—specifically, patient age, patient health outcome, and state-specific factors—to influence recovery amounts.

The average recovery amount for female patients in this sample was $358,860.10, compared to an average recovery amount for male patients of $364,027.90. This gender gap was analyzed using three types of statistical models assessing the impact of contextual variables on recovery amounts and the gender gap in recovery amounts: practitioner characteristics models, patient characteristics models, and state characteristics models. The following subsections discuss each of these statistical models and explain the usefulness of each model in predicting recovery amounts in diagnosis-related malpractice suits.

Given that the payment amounts were highly skewed and there was not a normal distribution for this variable, the natural log of this variable, hereinafter referred to as the "logpay variable," was used to generate all models. Each model is based on a linear regression.[156] All models discussed here use fixed effects for the state in which a case was brought and the year in which it was resolved;[157] controls for the duration of the case, the natural log of the population of the state in which the case arose, and the percentages of that state's population living in urban areas, identified as black, and identified as Hispanic; and includes probability weights for the percent of the national population living in the state in which the case occurred.[158] For all models, standard errors were clustered by state.[159] Table 2 below presents the results of each linear regression model.

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[156] A linear regression is a statistical test that calculates how much of the variance in the dependent variable—in this case, the logpay variable—is explained by the independent variables, or the factors being assessed for their influence on the dependent variable.

[157] Fixed effects account for variables that do not change, like the state variable, or that change at a constant rate over time, like the year variable. These variables have a consistent impact on the dependent variable—in this case, the logpay variable—and the statistical models discussed here account for that consistent impact.

[158] This accounts for the increased likelihood of medical malpractice cases in a state with a higher population density. In other words, the models discussed here account for the fact that there will inevitably be more malpractice cases filed and resolved in New York than in North Dakota simply because there are more people in New York than in North Dakota.

[159] Standard error is the amount of variation in the probabilities of different possible outcomes in an experiment. Standard errors are clustered when some data points are related to each other because a variable

Table 2. Linear Regression Results

Model	1	2	3	4	5	6	7	8
Pt gender	0.084** (0.036)	0.006 (0.028)	-0.201** (0.045)	0.010 (0.077)	0.065* (0.030)	0.099** (0.015)	-0.003 (0.087)	-0.039 (0.042)
Pr age	-0.001 (0.002)							-0.005 (0.003)
Pr grad yr	0.001 (0.001)							0.006 (0.005)
Pr field of license	-0.322** (0.026)							-0.376** (0.045)
Pt allegation	-0.001** (0.000)	0.000 (0.000)	-0.000 (0.000)	0.001 (0.001)	-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)
Pr/pt age difference	-0.089** (0.010)	-0.063* (0.251)	-0.009 (0.059)	-0.032 (0.054)	-0.017 (0.018)	-0.033 (0.038)		-0.158 (0.095)
Pt age		-0.004** (0.001)	-0.003 (0.003)	-0.003 (0.003)	-0.011** (0.001)	-0.016** (0.003)		-0.002 (0.003)
Pt outcome		0.451** (0.039)						0.576** (0.044)
Suit outcome		-0.518** (0.107)	-0.288 (0.218)	-0.524** (0.174)	-0.666** (0.200)	-0.489** (0.173)		-0.162 (0.372)
State congeniality index							6.506** (2.104)	6.019** (1.238)
% uninsured							-0.099 (0.066)	-0.061 (0.032)
State political party majority							-37.541* (16.491)	-55.789** (10.723)
% pop over 65							-0.721 (0.382)	-0.602** (0.219)
State per capita income							0.000 (0.000)	0.000 (0.000)
State gini index							1.102 (17.188)	4.365 (13.025)
State rate of fatal cardiac events in females							0.003 (0.012)	-0.002 (0.006)
State rate of preventable deaths in females							0.001 (0.065)	-0.002 (0.040)
State civil caseload per 100k residents							-0.000 (0.000)	-0.000 (0.000)

is identical for a group of data points. For example, in the compiled data set, the state variable is the same for many data points—all the cases which were filed in a particular state.

Duration of case	0.040⁑ (0.015)	0.010 (0.013)	0.142⁑ (0.035)	0.012 (0.035)	-0.039⁑ (0.007)	-0.035⁑ (0.010)	0.345 (0.182)	0.191* (0.091)
Population (logged)	-0.369 (0.789)	-0.418 (0.742)	-2.279 (2.496)	1.448 (1.337)	1.976 (1.016)	0.088 (1.264)	6.773 (5.209)	15.359⁑ (3.234)
% Urban	0.016 (0.016)	0.015 (0.014)	-0.029 (0.054)	-0.015 (0.049)	0.023 (0.025)	0.006 (0.028)	1.024 (0.565)	1.547⁑ (0.399)
% Black	0.131⁑ (0.043)	0.071⁑ (0.025)	0.053 (0.127)	-0.007 (0.097)	-0.132⁑ (0.045)	0.175 (0.088)	1.645* (0.744)	1.038⁑ (0.347)
% Hispanic	-0.016 (0.025)	-0.026 (0.020)	0.038 (0.110)	-0.066 (0.056)	-0.035 (0.023)	-0.047 (0.039)	-0.118 (0.198)	0.002 (0.168)
Constant	11.990 (8.864)	15.731 (9.063)	41.518 (31.609)	-7.437 (17.227)	-12.503 (12.480)	12.231 (15.418)	-168.058 (91.972)	-302.121⁑ (64.392)
Observations	28,063	27,596	1,727	4,120	7,872	9,111	2,572	2,516
R-squared	0.1544	0.2304	0.1939	0.2359	0.1441	0.2106	0.1419	0.3182

Significance: * = p<0.05; ⁑ = p<0.01
"Pr" = practitioner
"Pt" = patient
"Pop" = population
Note: Robust standard errors are in parentheses.

1. Practitioner Characteristics Models

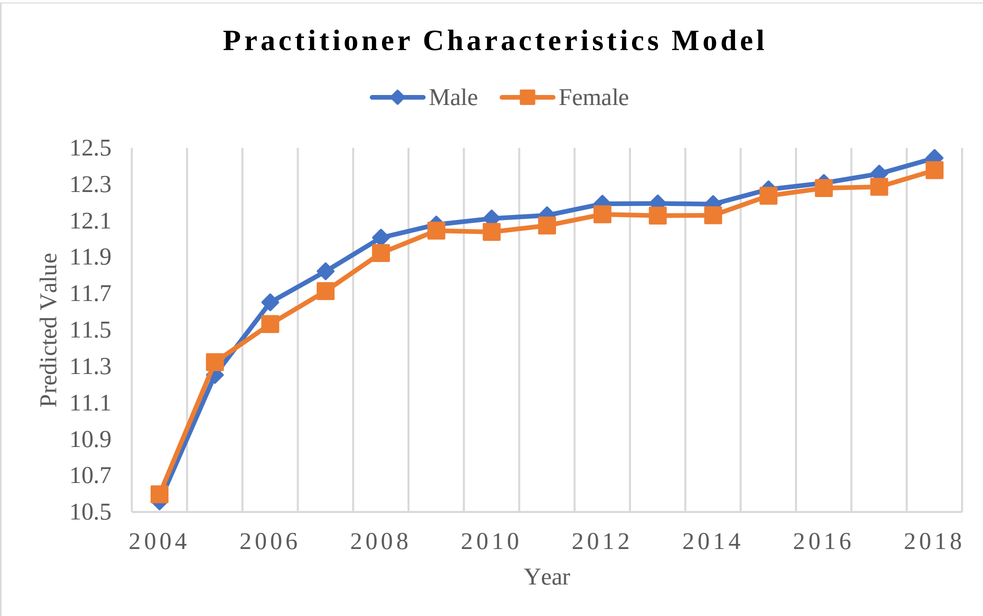
This model, labeled as Model 1 in Table 2, was designed to assess the impact of practitioner characteristics on patients' recovery amounts. The practitioner characteristics accounted for in this model were the practitioner's age, year of graduation from professional school, field of license, and the specific allegation made against the practitioner. The practitioner field of license variable included four categories: (1) primary and general care—allopathic physicians, physician residents, osteopathic physicians, and osteopathic physician residents; (2) specialists—dietitians, podiatrists, audiologists, vision and dental care service providers, and respiratory therapists; (3) nursing staff and physician assistants; and (4) emergency practitioners. The specific allegation variable included three categories: (1) failure to diagnose, (2) delay in diagnosis, and (3) wrong diagnosis. Patient gender was a significant predictor of the logpay variable, meaning it significantly predicted the amount of payment to plaintiffs, with male patients recovering more than their female counterparts. Patients who were younger than their practitioners recovered significantly more than their counterparts who were older than their practitioners; plaintiffs whose cases took longer recovered significantly more than their counterparts whose cases were resolved more quickly; and patients in states with higher proportions of black residents recovered significantly more than their counterparts. This model explains 15.44% of the variance in the logpay variable. In other words, the variables in this model explain 15.44% of the differences in logpay values, or the payment outcomes for plaintiffs included in the compiled dataset.[160]

The Model 1 linear regression was then used to calculate a predicted value which is graphically represented in **Figure 1** below for male and female patients. The predicted value is an expression of the logpay variable, which here is being used as a proxy for plaintiff recovery,[161] based on all variables accounted for in Model 1. **Figure 1** shows that, while Model 1 shows a statistically significant difference in payment amounts to plaintiffs based in part on patient gender, this difference does not appear to be very large, indicating that other variables may play a significant role in either amplifying or mitigating the role of patient gender in predicting plaintiff recovery.

[160] It is important to note two things here: First, while 15% might seem like a low number, given that human behavior is difficult to predict and given that this study is looking for percent differences in payment amounts—a continuous variable—a model explaining 15% of the variability in payment amounts has substantial explanatory power. *See, e.g.*, LINEAR REGRESSION MODELS, https://people.duke.edu/~rnau/rsquared.htm [https://perma.cc/J9LC-SJAW]. Second, in a strictly technical sense, the variability referred to here actually refers to the logpay variable, not the payment variable; however, the logpay variable is used as a proxy for payment amounts because the payment variable itself has a highly skewed distribution.

[161] See the explanation provided *supra* note 160.

Figure 1. Practitioner Characteristics Model



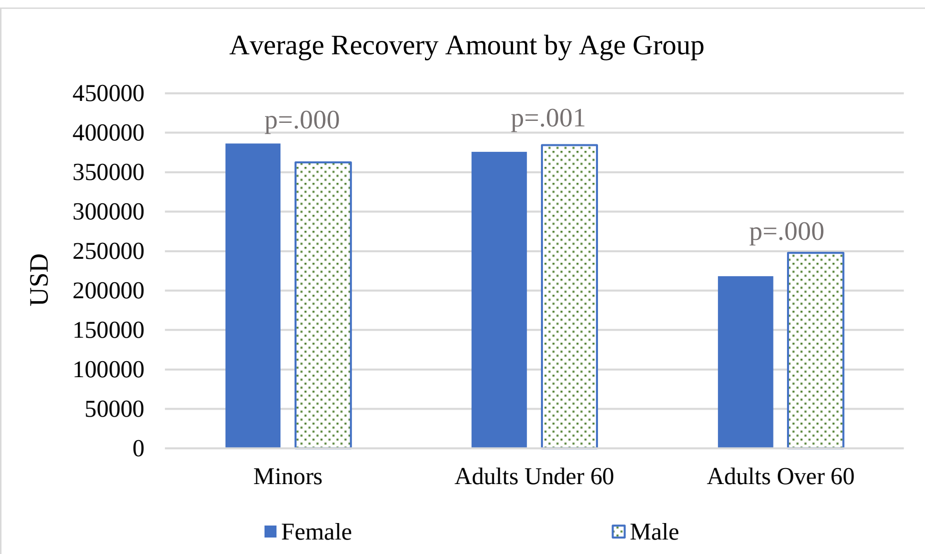
2. Patient Characteristics Models

This set of models was designed to assess the impact of patient characteristics on patients' recovery amounts. The patient characteristics measured here were patient age; patient health outcome—whether the patient experienced minor injury (purely emotional or minor and temporary physical injury), moderate injury (major but temporary physical injury or minor permanent injury), major injury (significant permanent injury), or death; whether the patient's case settled or received a judgment; and the type of misdiagnosis alleged—missed, delayed, or wrong diagnosis.

In the first patient characteristics model, labeled as Model 2 in **Table 2** above, patients who did not settle; younger patients; patients who suffered worse health outcomes; and patients in states with a higher proportion of black residents recovered significantly more than their counterparts. Patient gender, however, was not statistically significant, meaning it did not help predict a plaintiff's recovery amount. This model explained 23.04% of the variance in the logpay variable, or 23.04% of the variability in the recovery amounts received by plaintiffs included in the compiled dataset.

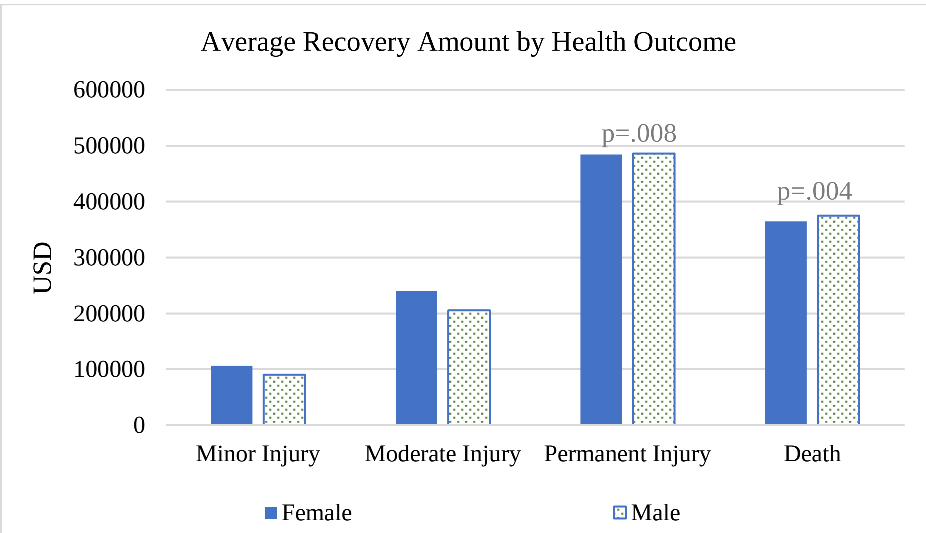
But a closer look at the data reveals that the lack of a statistically significant gender gap in this model is actually the result of a reversed gender gap among patients under twenty years old, which masks the effect of the gender gap among adult patients. Female minors recovered significantly more than male minors (p=.000), with the average recovery amount for female minors being $386,518.10, compared to $362,263.50 for male minors. But among patients over twenty years old, the gender gap in recovery amounts was as hypothesized based on the literature on the knowledge and trust gaps. Among adults under sixty years old, female patients recovered significantly less than their male counterparts (p=.001), with the mean recovery amount for a female patient being $375,982.10, compared to $384,188 for a male patient. Among patients over sixty years old, the gender gap was even more pronounced. Female patients recovered significantly less than their male counterparts (p=.000), with female patients recovering an average of $218,087 compared to male patients' $247,802.40. This amounts to an average 13.6% difference in recovery amounts based on patient gender. **Figure 2** below presents a graphical representation of this data, showing that there is a statistically significant gender gap in recovery amounts for each aforementioned age group.

Figure 2. Average Recovery Amount by Age Group



This interaction between patient age and patient gender indicates that gendered effects may be masked by other variables which interact with patient gender. Such an interaction is evident also in the analysis of patient health outcome: The gender gap in recovery amounts was significantly impacted by a patient's health outcome, with the gender gap being most pronounced among patients who experienced fatal injuries. In those cases, plaintiffs on behalf of female patients who died recovered significantly less than plaintiffs on behalf of male patients who died (p=.01). There was also a statistically significant gender gap in recovery amounts among plaintiffs who experienced permanent injury, but, as shown in **Figure 3** below, that gap appears to be small.

Figure 3. Average Recovery Amount by Patient Health Outcome



Given the significant differences in the gender gap based on patient age and health outcome, four additional patient models were created to separately assess each patient health outcome: minor, moderate, major, and fatal injury. Minors were excluded from these models to avoid the masking effect seen in Model 2. The first of these models, labeled as Model 3 in **Table 2** above, tested the effects of patient characteristics—patient gender, patient age, whether the practitioner was older or younger than the patient, whether the case settled, and type of misdiagnosis alleged—on recovery amounts for adult patients who experienced minor injury. In this model, patient gender was a significant predictor of the logpay variable, but its effect was the opposite of what was hypothesized: Female patients recovered more than their male counterparts who experienced minor injuries. Patients whose cases took longer also recovered significantly more than their counterparts. This model explains 19.39% of the variance in the logpay variable, or 19.39% of the variability in the recovery amounts received by adult plaintiffs with minor injuries.

The second of these models, labeled as Model 4 in **Table 2** above, tested the same variables as Model 3, but for adult patients who experienced moderate injury. In this model, patient gender was not a significant predictor of recovery amount. The only significant predictor was whether the case settled or received a final judgment, with patients who did not settle recovering more than their counterparts who did settle. This model explains 23.59% of the variance in the logpay variable, or 23.59% of the variability in the recovery amounts received by adult plaintiffs with moderate injuries.

The third model, labeled as Model 5 in **Table 2** above, tested the same variables as in Models 3 and 4, but for adult patients who experienced major injury. Patient gender was a statistically significant predictor of recovery amounts, with male patients recovering more than their female counterparts. Younger patients, patients who did not settle, patients whose cases were resolved more quickly, and patients in states with lower proportions of black residents also recovered significantly more than their counterparts. This model explains 14.41% of the variance in the logpay variable, or 14.41% of the variability in the recovery amounts received by adult plaintiffs with major injuries.

The last of this group of models, labeled as Model 6 in **Table 2** above, tested the same variables as Models 3, 4, and 5, but for adult patients who experienced fatal injury. Patient gender was a significant predictor of recovery amounts, with plaintiffs on behalf of male patients recovering more than plaintiffs on behalf of female patients. Younger patients, plaintiffs who did not settle, and plaintiffs whose cases were resolved more quickly also recovered significantly more than their counterparts. This model explains 21.06% of the variance in the logpay variable, or 21.06% of the variability in the recovery amounts received by adult plaintiffs with fatal injuries.

The upshot of Models 3 through 6 is that patient gender can have a very different impact among different plaintiff groups. For instance, it seems that among adult patients with moderate injuries, patient gender is a much less influential factor than it is for other patient groups. It is clear from these models that patient gender meaningfully interacts with age and health outcome to produce varying results for different categories of patients. These statistical models alone, however, do not shed light on why the gender gap is present for most patient groups, but absent for adults with moderate injury. These models also do not explain why the gender gap is reversed among some patient groups, like adult patients with minor injuries and minor patients. What these models do show is that patient gender does not have a consistent effect and that more research is needed to understand the effects of patient gender on plaintiff recovery.

To better understand the gender gap, or lack thereof, among different patient groups, the linear regressions used to produce Models 3 through 6 were used to calculate a predicted value for the recovery amount variable, adjusted for all variables included in those models, to show the varying impact of patient gender among different categories of patients. **Figures 4–7** below show the average recovery amounts for male and female adult patients in each health outcome category based on those predicted values. Based on this set of models, it seems that gender most significantly affects plaintiff recovery amounts for adults experiencing minor injury and adults who experienced major or fatal injury, but gender has opposite impacts for these patient groups.

Figure 4. Patient Characteristics Model: Adults with Minor Injury

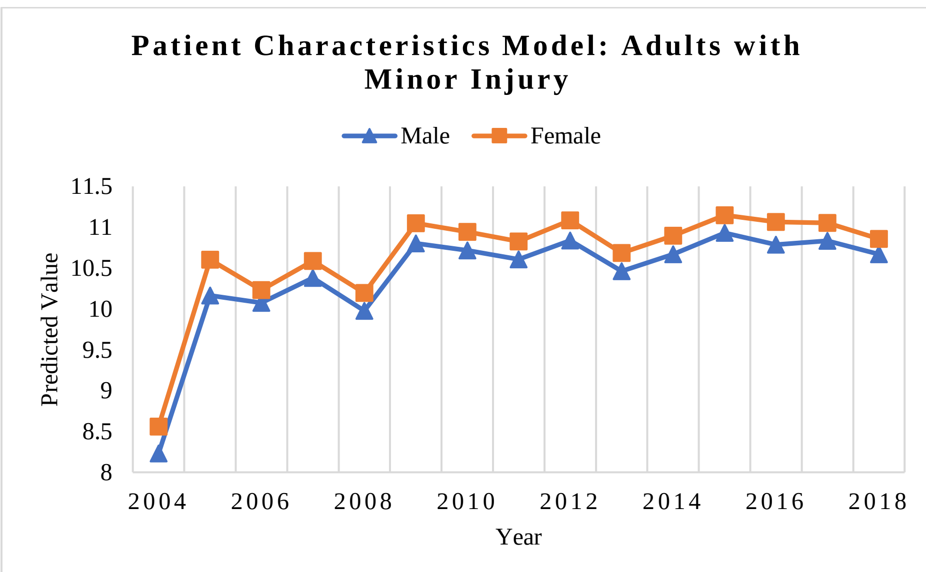


Figure 5. Patient Characteristics Model: Adults with Moderate Injury

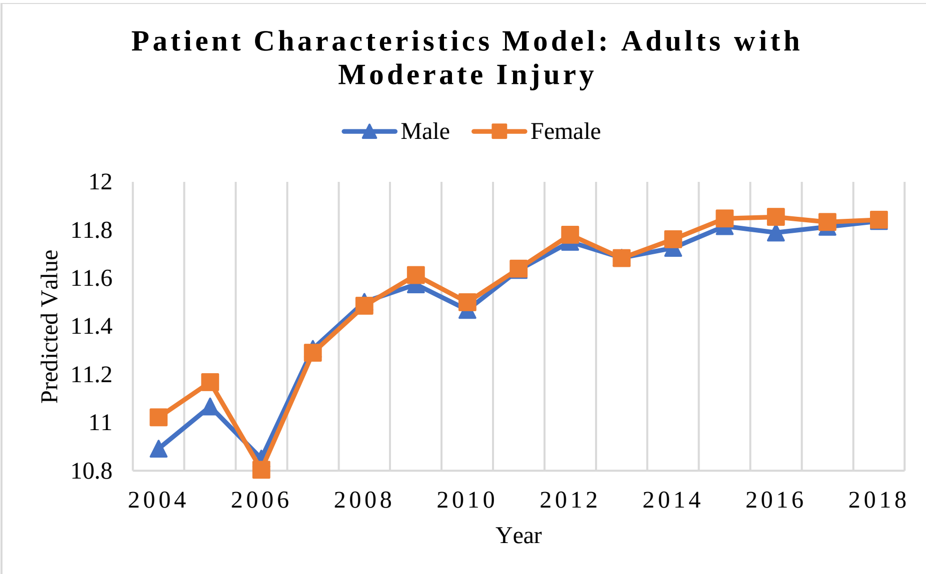


Figure 6. Patient Characteristics Model: Adults with Major Injury

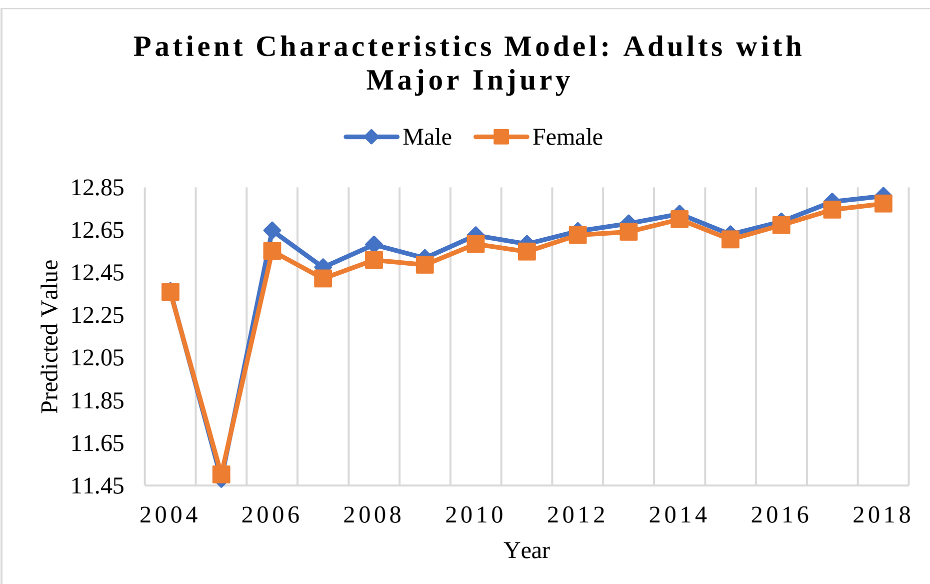
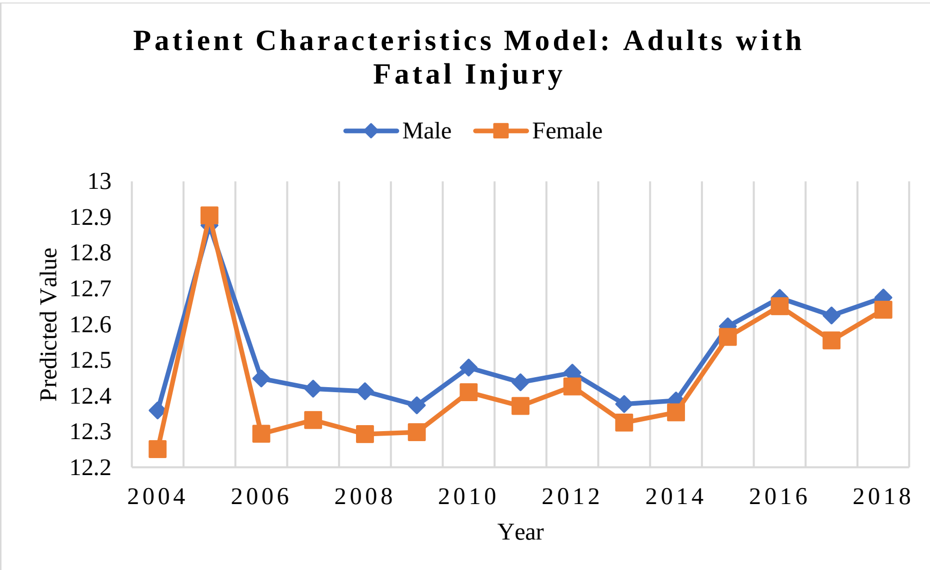


Figure 7. Patient Characteristics Model: Adults with Fatal Injury



3. State Characteristics Model

The gender difference in average recovery amount also varies greatly by state, which is unsurprising given the differences in medical malpractice law from state to state. States vary in their contextual factors, such as population size, per capita income, the population density of their urban areas, and the specific features of the healthcare system—from legislative decisions about damages caps in medical malpractice suits to the accessibility of Medicaid and other health insurance. States experience varying levels of medical malpractice litigation, as well: New York district and state courts; Texas, Pennsylvania, and Maryland district courts; and New Jersey, California, Illinois, and Florida state courts experience the highest levels of malpractice litigation in the country.[162] Interestingly, according to analyses of the compiled dataset in this study, three of those states—New Jersey, Maryland, and Florida—have some of the lowest average gender disparities in recovery amounts, which suggests that states with more exposure to malpractice litigation may be better equipped to deal with the biases which may have contributed to a plaintiff's injury. **Table 3** below shows the five states with the greatest gender disparities in average recovery amounts and the five states with the smallest gender disparities.

[162] *See* Medical Malpractice Litigation Analytics, *supra* note 150.

Table 3. Ten States with the Greatest and Smallest Gender Disparities in Mean Recovery Amounts Disadvantaging Female Patients

Greatest Gender Disparities		**Smallest Gender Disparities**	
State	**Gender difference in average recovery amount**	**State**	**Gender difference in average recovery amount**
New Hampshire	$195,776.20	Louisiana	$167.40
Wyoming	$144,322.60	New Jersey	$1,405.90
Connecticut	$143,721.20	Maryland	$2,153.90
Colorado	$139,730.10	Kansas	$3,195.10
South Dakota	$106,475.90	Florida	$3,206.60

Still, it is unclear which contextual characteristics in these states—although frequency of litigation may be among them—make them more or less prone to gender gaps in recovery amounts. Some of the states with the smallest gender disparities, such as Louisiana, have very low state congeniality indices,[163] suggesting that perhaps legislative measures restricting medical malpractice litigation have similar or equally disadvantageous impacts on both male and female patients/plaintiffs. However, other states in this category, like New Jersey, have much higher state congeniality indices, which indicates there must be other contextual factors at play. The following state characteristics models were designed to identify which state-based contextual factors are most influential on the gender gap in recovery amounts.

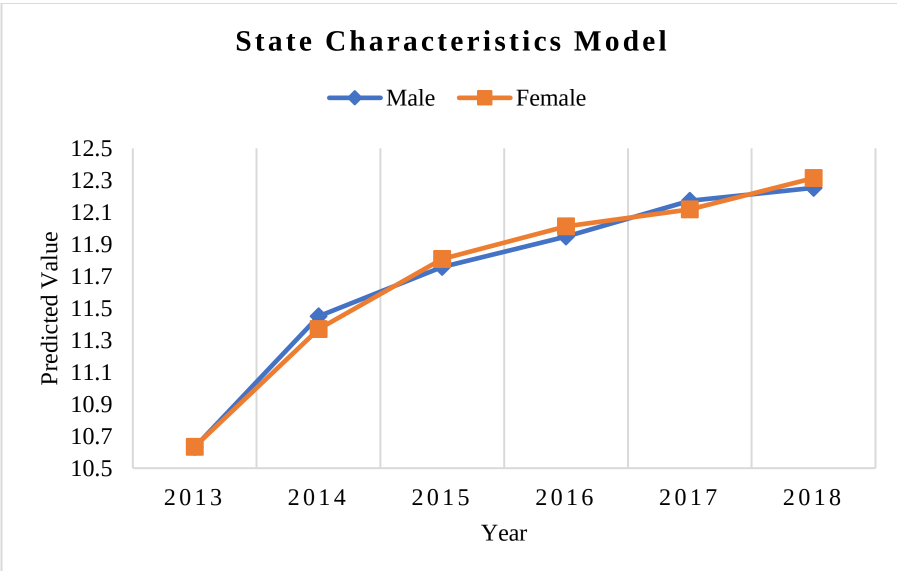
The state characteristics model, labeled as Model 7 in **Table 2** above, tested the effects of various state characteristics on recovery amounts. State characteristics include congeniality index, population, Gini coefficient, per capita income, historical political party control, percent population over age sixty-five, percent female population over age sixty-five, percent population lacking health insurance, death rate for female residents due to cardiac incidents, rate of preventable death among female residents, civil caseload per 100,000 residents, medical malpractice caseload per 100,000 residents, and medical malpractice jury trial rate. In this model, patient gender was not a significant predictor of recovery amount, but patients in states more amenable to malpractice suits, Republican

[163] See *supra* section III.A., discussing the congeniality index variable constructed from state statutes to represent how receptive a particular state's court system is to medical malpractice lawsuits. States were given a score on the index based on the statute of limitations for medical malpractice suits; whether the state currently has, or had at any point between 2004 and 2018, a cap on damages and whether the cap is for noneconomic damages only or for total damages; and whether the state currently uses a locality rule, or used a locality rule at any point between 2004 and 2018.

states, and states with a greater percentage of black residents all recovered significantly more than their counterparts. This is particularly interesting because the states which are least amenable to malpractice suits according to the congeniality index are states in which the Republican party is dominant and the states which are most amenable to malpractice suits are states in which the Democratic party is dominant. The relationship between a state's congeniality index and dominant political party is statistically significant (p=.000), with Republican states scoring lower on the congeniality index. Model 7 therefore suggests that some of the most influential state contextual factors may have contradictory impacts on patient recovery amounts, as both patients in states more amenable to malpractice suits and patients in Republican states, which are statistically likely to be less amenable to malpractice suits, recovered significantly more than their counterparts. This sheds some light on why the gender gap disappears in this model: Because influential state contextual variables may have opposing effects on one another, they may also have mitigating or amplifying effects on the impact of patient gender. When analyzed together, the gender gap disappears, but it is likely that the gender gap is still significant for subsets of patients within states with significant contextual variables, like more amenable malpractice laws. For example, it is possible that there is no significant gender gap among all patients in a state with a high congeniality index, but there is a significant gender gap among black patients in the same state. This would constitute a similar masking effect as seen in the patient characteristics models, in which the significance of the gender gap depended on patient age and health outcome. However, more research is required to parse out the contradictory impacts of these state variables.

Model 7 explains 14.19% of the variance in the logpay variable, or 14.19% of the differences in plaintiffs' recovery amounts. Model 7 was used to calculate a predicted value for the recovery amount variable, which is adjusted for all variables included in that model. **Figure 8** below shows the average recovery amounts for male and female adult patients based on those predicted values.

Figure 8. State Characteristics Model



4. Cumulative Models

The last statistical model is cumulative, accounting for all the variables in the practitioner, patient, and state characteristics models. This model serves a comparative function but is also designed to assess which contextual factors have the strongest impact on recovery amounts. It is labeled as Model 8 in **Table 2** above. According to Model 8, patients with worse health outcomes, patients in states with higher congeniality index scores, patients in Republican states, patients in states with lower proportions of the population aged sixty-five or older, patients in more populated states, patients in states with larger urban populations, patients in states with a higher proportion of black residents, and patients whose cases took longer recovered significantly more than their counterparts. Patient gender was not a significant predictor of recovery amount in this model, but that is unsurprising given the masking effects revealed in the patient characteristics models and the masking effects likely present in the state contextual variables model. Moreover, the patient gender variable is significantly correlated with other variables shown to be significant in the cumulative model, including a state's proportion of black residents and a state's political affiliation. This further indicates that, as patient gender has interlocking effects with these variables, the effect of patient gender could be masked by the interlocking effects of these variables in the cumulative model.

Table 4 below presents the statistically significant partial correlation statistics for patient gender and each of four other variables.

Table 4. Statistically Significant Partial Correlations Between Patient Gender and Other Variables

Variable	**Partial Corr.**	**Semipartial Corr.**	**Partial Corr.^2**	**Semipartial Corr.^2**	**P Value**
Female Preventable Death Rate	-0.1033	-0.1010	0.0107	0.0102	0.0164
Patient Health Outcome	0.1072	0.1049	0.0115	0.0110	0.0127
Percent Black	0.0943	0.0921	0.0089	0.0085	0.0286
Political Affiliation	0.0855	0.0835	0.0073	0.0070	0.0471

Model 8 explains 31.82% of the variance in the logpay variable, or 31.82% of the differences in plaintiff recovery amounts. **Table 5** below provides a summary of the significance, or lack thereof, of patient gender variable in each of the models included in this study.

Table 5. Significance of Patient Gender Variable in Each Model

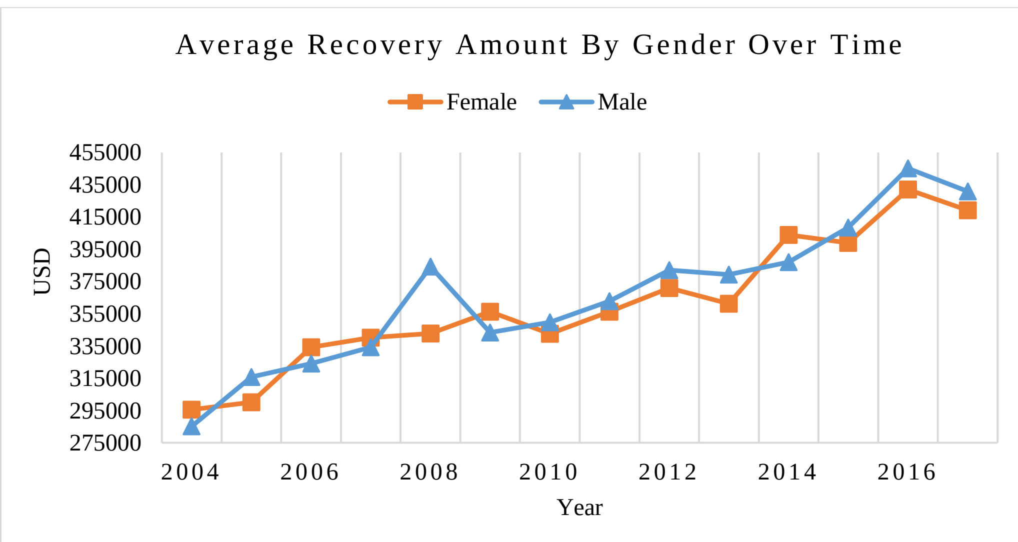
	Model	Patient Gender
Practitioner Model	1	0.084* (0.036)
Patient Models	2	0.006 (0.028)
	3	-0.201⁑ (0.045)
	4	0.010 (0.077)
	5	0.065* (0.030)
	6	0.099⁑ (0.015)
State Model	7	-0.003 (0.087)
Cumulative Model	8	-0.039 (0.042)

Significance: * = p<0.05; ⁑ = p<0.01

5. Change Over Time

Based on these statistical models, it seems that there is a significant gender gap in recovery amounts among some subgroups of patients and that patient gender interacts with other contextual variables like age, patient health outcome, and state characteristics. The existence of the gender gap seems to have remained present over time, as evident in **Figures 1**, **4**, **6**, and **7**, which show the predicted variables for Models 1, 3, 5, and 6, in which gender was a significant factor. The stability of the gender gap may be due to the interplay of many significant contextual factors which may have opposing effects. Even if all these factors change over time, the net effect of these factors on the gender gap might not change very much. The stability of the gender gap may also be due to the lag time between advances in medical science and the infiltration of those advances into the medical school curriculum and subsequently into clinical practice.[164] However, as seen in **Figure 9** below, which shows the change in average recovery amount by gender over time, there are "spikes" in the gender gap—for example, in 2008—which may be due to time-sensitive factors. It is unclear why those spikes occurred; further research should examine changes in the gender gap over time.

Figure 9. Gender Differences Recovery Amount Over Time



[164] *See* Zoë Slote Morris, Steven Wooding & Jonathan Grant, *The Answer is 17 Years, What is the Question: Understanding Time Lags in Translational Research*, 104 J. ROYAL SOC'Y MED. 510, 510 (2011) (concluding that it takes an average of seventeen years for health research to permeate into medical practice).

Taken as a whole, the results of the previous statistical analyses and the analysis of the gender gap over time show that there is, at least among some patient groups, a significant gendered difference in recovery amounts in diagnosis-related medical malpractice suits; that the gender gap is variable by state; that the gender gap is heavily impacted by patient age and health outcome; and that the gender gap has remained present over time, even with the accumulation of more knowledge about women's health.

IV. Practical Implications of the Statistical Analysis of Gender Bias in Medical Malpractice Lawsuits for Delayed, Wrongful, or Missed Diagnoses

This study addressed five overarching questions about the effect of patient gender in medical malpractice cases and found:

1. That there is a gendered difference in the average recovery amount for medical malpractice plaintiffs alleging a delayed, wrong, or missed diagnosis, at least among some patient groups;
2. That the existence and size of the gender gap varies by the age of the patient;
3. That the existence and size of the gender gap varies by the patient's health outcome;
4. That the size of the gender gap varies by state, depending on a variety of intersecting factors;
5. And that the gender gap has remained present over time.

Based on the analyses discussed in Part III, the most influential variables affecting recovery amounts for medical malpractice cases alleging missed, wrong, or delayed diagnoses are state contextual factors, patient gender, patient age, and patient outcome.

The implications of these findings suggest that the standard of care in medical malpractice law disadvantages women, and particularly certain groups of women, like women over the age of sixty, relative to their male counterparts. These findings support the hypothesis that the interaction of the knowledge and trust gaps with the medical malpractice standard of care decreases female patients' access to equal justice in the courtroom after they have experienced injustice in their medical care. While there are many simple changes which could be made in the healthcare context that may help decrease this gap, such as changing intake screening questions,[165] these changes would

[165] For instance, it is not yet standard practice to ask about family history of autoimmune diseases, which disproportionately affect women, even though they tend to run in families. *See* DUSENBERY, DOING HARM, *supra* note 4, at 144.

not address the bulk of the knowledge gap and would not address the trust gap at all. Moreover, as Dr. Daniel Clauw, director of the Chronic Pain and Fatigue Research Center at the University of Michigan, says, "medical school curricula tend to change at a glacial pace,"[166] which means women may be waiting an entire generation for the quality of care they receive to catch up with today's medical knowledge. Other changes in the medical field, such as requiring a women's health component to practitioners' Continuing Medical Education, may be more effective, but also more difficult to implement.

The legal system is currently protecting the lag time between medical research and its incorporation into medical practice and is disincentivizing change. Ensuring that the medical malpractice standard of care protects women patients, and particularly those who have experienced the negative stigma of the trust gap, may force change in the healthcare space and promote higher quality care for women. If there is no or a lesser penalty for distrusting and discounting women patients, then the gender gap in quality of care will continue. The medical malpractice standard of care should therefore not continue to protect the common practice of undervaluing women patients' accounts of their own symptoms.

A. Limitations of the Data

It is important to note that this study assessed only recovery amounts, or the degree of success of patients/plaintiffs as measured by monetary recovery. In other words, all plaintiffs in the compiled data set used here were, to some degree, successful in recovering for their medical malpractice claims. That patient gender affects recovery *amount* suggests that it may also affect the likelihood of *any* recovery in a diagnosis-related medical malpractice case. Recall the case of Edna Wilburn, in which a court ruled that practitioners' repeated dismissal of Edna's symptoms as psychological, though it delayed diagnosis of her blood disorder, did not amount to medical malpractice.[167] Or consider the *Pleasants* case, in which a court ruled that a practitioner's discounting of a teenage girl's severe abdominal pain, resulting in her death, was not medical malpractice.[168] Cases like *Wilburn* and *Pleasants* would not be captured by the present study because those plaintiffs did not recover at all. Their cases would not be recorded in a centralized database like the NPDB, as was used to create the compiled dataset for this

[166] Interview with Daniel Clauw by Maya Dusenbery, *quoted in* DUSENBERY, DOING HARM, *supra* note 4, at 203; *see also* Morris, Wooding & Grant, *supra* note 164, at 510 (concluding that it takes an average of seventeen years for health research to permeate into medical practice).

[167] Wilburn v. Cleveland Psychiatric Inst., 743 N.E.2d 515, 519 (Ohio Ct. App. 2000).

[168] Pleasants v. Alliance Corp., 209 W. Va. 39, 41–42 (2000).

study. Future research should attempt to fill this gap by assessing gender differences in success rates, not just recovery amounts, for diagnosis-related malpractice suits, controlling for the contextual factors assessed in this study—namely, patient age, patient health outcome, and state contextual factors. Future research should also aim to address issues of intersectionality, as aforementioned in Part I.C.4., specifically by collecting data on patient and practitioner race and gender, which is not collected by the NPDB, and by assessing which contextual factors might make the gender gap vary so much from state to state. Lastly, future research should analyze the text of court opinions and brief filings in medical malpractice cases to offer greater insight as to how the trust and knowledge gaps interact with the standard of care in medical malpractice cases.

Future research is also necessary because the present study is limited in several important ways. Even if success rate data including cases like *Wilburn* and *Pleasants* was available, there is a funneling effect for plaintiffs who bring such suits on allegations of delayed, wrongful, or missed diagnoses. A correct diagnosis is generally needed to show that the original wrong diagnosis or the delay of diagnosis was negligent; this requires time and resources prior to the bringing of the lawsuit, which limits patients' and their families' ability to seek justice in the legal system for unjust treatment in the medical system. The ratio of plaintiffs who bring malpractice suits to patients who experience medical error is estimated to be between one in six and one in eight.[169] Several demographic groups, like low income and elderly patients, may not be able to take advantage of medical malpractice law opportunities for recovery, as discussed in Part II.C.[170] Future research should consider ways to incorporate these patients' unpursued legal claims in an analysis of gender bias in medical malpractice law.

This dataset is also limited in its ability to show intersectional effects. This dataset is confined to a gender binary, given that the NPDB only codes patient gender as male or female. The NPDB does not collect data on the race of the patient, nor the race or gender of the healthcare professional. These limitations should be assessed with more detailed data collection and analyses of these missing demographic and contextual factors.

CONCLUSION

The knowledge and trust gaps impact women patients' medical malpractice cases for diagnosis-related issues, but the mechanics of how gender affects recovery is still unclear. The present study has found significant differences in recovery amounts for cases in

[169] *See* PUBLIC CITIZEN: CONGRESS WATCH, *supra* note 105, at 1.

[170] *See* Allen & Pierce, *supra* note 153.

which the patient is female versus cases in which the patient is male, even accounting for a host of contextual factors, among adult patients experiencing serious or fatal injuries and particularly among such patients over age sixty. The present study adds to the current body of research by showing that there is a gendered injustice in both the medical and the legal fields and the gender imbalance in each field reinforces the other. The current medical malpractice standard of care protects a disincentive to change the knowledge and trust gaps, and some policy change is likely needed in both the medical and the legal spheres to better protect women patients and plaintiffs in medical malpractice cases.

Future research should focus on learning more about the impact of the knowledge and trust gaps on women patients' legal odds as well as on disentangling the web of interconnected contextual factors to better understand how and when gender matters in medical malpractice suits. For instance, one state's statutes and legal precedent might be more or less conducive than another's to the interplay of the knowledge and trust gaps and the medical standard of care. Better understanding the role of patient gender in the medical malpractice context will inform and guide a more targeted policy change agenda to protect patients' rights.