# INVISIBLE WOMEN: STUDY GUIDE

## EXPOSING DATA BIAS IN A WORLD DESIGNED FOR MEN

PREPARED BY

## DATA FEMINISM NETWORK

DFN

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# INTRODUCTION: THE DEFAULT MALE

## Meet the Author!

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Seeing men as the default is fundamental to the structure of human society (1). From anthropology, to history, to language itself, male dominance permeates. In gendered languages, when the gender is unknown or when the group is mixed, the generic masculine is used, making male quite literally the default (7). **The result of our deeply male-dominated culture is that "the male experience [and] the male perspective, have come to be seen as universal - while the female experience - that of half the global population, after all, is seen as, well, niche"** (12). Male dominance has also created the gender data gap; "because male data makes up the majority of what we know, what is male comes to be seen as universal" (23). **With a niche identity and subjective point of view, women are framed to be forgettable, ignorable, and dispensable from culture, from history, and from data** (23). As Criado-Perez puts it, "it's time for women to be seen" (24).

# PART I:
# DAILY LIFE

## Chapter 1: Can Snow-Clearing Be Sexist?

The question of whether snow-clearing can be sexist started out as a joke, something that the "gender people" would surely keep their noses out of. But let's look at the facts: **it's a fact that we lack consistent, sex-disaggregated data from every country, but the data we do have makes it clear that women are far more likely than men to walk and utilize public transport** (29). Men are more likely to drive a car and if a household owns a car, men have the dominant access (30). Another factor to consider is travel patterns. Men tend to have simple travel patterns (to and from work), whereas women have more complicated travel patterns (30). This stems from the fact that **women do 75% of the world's unpaid care work and this affects their travel needs.** While men travel on their own, women travel with babies, children, and elderly relatives who they are caring for. Unplowed roadways, therefore, have a significant negative impact on these women. **So yes, snow plowing can be sexist.**

## Chapter 2: Gender Neutral with Urinals

Urban design, even when intended to be "equal", is far from equitable. **For women, waiting in a long line for the bathroom after a movie finishes is a common occurrence. Men, on the other hand, don't seem to have this same issue.** That's because women on average take 2.3 times longer in the bathroom than men (48). Plus, women are more likely to be accompanied by children, differently-abled people, or elderly people and there is a 20-25% chance that women of childbearing age may be on their period at any one time, thus needing extra time to change a tampon or sanitary pad (49). In an attempt to make their washrooms gender-neutral, a cinema replaced the male bathroom with the sign "gender-neutral with urinals" and the female bathroom to "gender-neutral with cubicles" (48). Men were able to use the bathroom with urinals and the one with cubicles, however, women were limited to the bathroom with cubicles (48). **This is an example of where the complex needs of women and people who don't use urinals were ignored and, as a result, were further disadvantaged.**

A third of the world's population lacks adequate toilet provision (49). Women around the world are at risk of sexual assault when finding or using a toilet, especially when they have to walk far distances in the dark. **Urban planning that disregards women's risk of sexual assault is a violation of their equal right to public spaces** (57). This is just one of the many ways that urban planners exclude women (57). **When planners don't account for gender, "public spaces become male spaces by default"** (66). Governments may think they are saving money by failing to provide public toilets, but a 2015 Yale study in the town of Khayelitsha, South Africa, found that the reduced social and policing costs of adding 11,300 more toilets would leave the Township $5 million better off (51). All in all, "designing the female half of the world out of public spaces is not a matter of resources, it's a matter of priorities" (66)

# Not-So-Fun Facts!

- When the generic masculine is used (man, he/his, etc.) people are more likely to recall famous men than famous women; to estimate a profession as male-dominated; and to suggest male candidates for jobs and political appointments (5)
- Women are less likely to apply, and less likely to perform well in interviews, for jobs that are advertised using the generic masculine (5)
- Only when the lead of a film is female do men and women appear about as often as each other (10)
- Thirty years of language and grammar textbook studies in countries including Germany, the US, Australia, and Spain have found that men outnumber women in example sentences (on average by about 3:1)
- Women will buy books by and about men, but men won't buy books by and about women (or at least not many) (15)
- An analysis of how gender affected support for Trump revealed that "the more hostile voters were toward women, the more likely they were to support Trump" (24)
- According to the UN, one in three women lack access to safe toilets, and WaterAid reports that girls and women collectively spend 97 billion hours a year finding a safe place to relieve themselves (49)

# PART II:
# THE WORKPLACE

## Chapter 3: The Long Friday

October 1975 came to be known as "the long Friday" by Icelandic men. On this day, 90% of Icelandic women took part in a strike where they did no work (paid and unpaid) to let the men see how they coped without the invisible work they do every day to keep the country moving" (69). **Around the globe, 75% of unpaid work is done by women, who spend between three and six hours per day on it compared to men's average thirty minutes to two hours** (70). **The imbalance of work has a negative impact on women's health.** Studies show that it's unhealthy to work more than forty hours a week, but women work well over 40 hours. Stress affects mental health and over time actually affects women's hospitalization and mortality rates. **Women's overload of paid work plus unpaid care work is ultimately harming them, both mentally and physically.**

Some women who must care for their families accept part-time work because they can't afford to fully quit the workforce. They are often forced to accept a lower job than they are qualified for because of the more accessible hours a part-time job offers. There is also the issue of maternity leave, as **"not all maternity leave policies are made equal"** (78). Some countries and jobs offer paid leave for both mothers and fathers, while others offer nothing. **Studies show that the gender pay gap widens over the years after a woman has a child.** The pay gap in the US across mothers and married fathers is three times as high as the pay gap between men and women who don't have children (76). In a US University context, "married mothers with young children are 35% less likely than married fathers of young children to get tenure-track jobs, and among tenured faculty 70% of men are married with children compared to 44% of women" (83). A few factors workplaces should consider to decrease the gender pay gap are paid paternity leave (in addition to paid maternity leave), as well as after-school programs for children, daycare, and conveniences like laundry services.

The culture of paid work "needs to take into account that **women are not the unencumbered workers the traditional workplace has been designed to suit**, and that while men are more likely to fit into this automaton ideal, increasing numbers of them no longer want to" (91). Nothing and nobody could function without the invisible, unpaid work carers do (91). To start, workplaces need to be designed to account for invisible and unpaid work (91).

# Chapter 4: The Myth of Meritocracy

Meritocracy is a system where the highest positions and rankings are based on merit, talent, or achievement, not necessarily race, wealth, or social class. It's thought to be fair and unbiased, and to justify who is at the top upon them simply being the best. **Meritocracy, however, is really just an "insidious myth" that "provides cover to institutional white male bias"** (93). Essentially, standards of success are based on, you guessed it, the white man. A study of 248 performance reviews collected from a variety of US-based tech companies found that women receive personality criticism that men do not (93). When women try and live up to the male-biased standard, they are told to "watch their tone, to step back" and they are called "bossy, abrasive, strident, aggressive, emotional and irrational" (93). The only word among this list that appeared in male reviews was "aggressive" (93). In addition, white men are rewarded at a higher rate than equally performing women and minoritized ethnicities, with one study of a financial corporation revealing a 25% difference in performance-based bonuses between men and women in the same job (93-94). **This is why more than 40% of women leave tech companies after ten years compared to only 17% of men. A "belief in meritocracy may be all you need to induce bias"** (94).

Along with the burden of never being able to fulfill the male-biased standard of success, female professors are also accustomed to unpaid work at work. For example, female professors are the ones students feel more comfortable turning to when they have problems and they are asked to do more unvalued admin work because they fear seeming unlikeable if they say no (97). Apparently, women are seen as unlikeable no matter what they do. An analysis of 14 million reviews on the website RateMyProfessors.com found that female professors are more likely to be "mean, unfair, strict and annoying" while male professors are more likely to be described as "brilliant, intelligent, smart and a genius (99-100). Part of this has to do with "brilliance bias", the association of brilliance as a male trait. **Women are far less likely to be considered a genius**, something Criado-Perez partially attributes to the fact that "**we have written so many female geniuses out of history**, they just don't come to mind as easily" (100).

Brilliance bias is something children learn at school. Studies show that by the time girls turn six, they start "doubting their gender" (101). If a game is presented to children as intended for those "who are really, really smart" five-year-old girls are equally likely to want to play it as boys, but six-year-old girls are "suddenly uninterested" (101). This reveals that **schools are spreading the message to little girls that "brilliance doesn't belong to them"** (101). What happens, then, when a requirement for a job is "brilliance"? A study on language in a job posting revealed drastic differences in rates of women applicants. The job posting with an emphasis on "aggressiveness and competitiveness" brought in 5% of women applicants whereas a job posting with an emphasis on enthusiasm and innovation brought the number up to 40% (110).

The solution to decreasing bias in hiring and promotions? Accountability and transparency (111).

# Chapter 5: The Henry Higgins Effect

Men are considered a standard that women simply fail to live up to. **It is assumed that many problems women face can be solved if women are trained to be more like men.** This tendency is known as the Henry Higgins effect and is based on the character in My Fair Lady who sang "why can't a woman be like a man"**.** If you're not a cis man and you work in an office, have you ever noticed that your office feels way too cold? It could be shorts weather outside, yet you're bundled up inside? This is because the formula to determine a standard office temperature was developed in the 1960's around the metabolic resting rate of the average forty-year old, 70 kg man (113). A recent study found that the "metabolic rate of young adult females performing light office work is significantly lower" than the standard rate for men doing the same type of activity. The formula may "overestimate female metabolic rates by 35%" which means that current offices are on average five degrees too cold for women (113).

Another context where we rely on studies done on men as if they apply to women is occupational health research. **Serious injuries for men at work have been decreasing while for women they have been increasing. This is due to gender data gaps in occupational health research.** Injuries are caused by harsh chemicals that women absorb differently than men, improperly fitting PPE (a bulletproof vest that doesn't fit over breasts), and equipment not made for women (plows). We have a need for data that is separated and analysed by sex, and for physical effects to be measured for women themselves, not men (120). As a result of this gender gap in occupational research, "women are dying" (120). The women who do work in male-dominated industries have been treated as 'confounding factors' and data on them went uncollected.

# Chapter 6: Being Worth Less Than a Shoe

The title of this chapter reflects the reality that many minoritized women face: being worth less than a shoe. This comes from a story about a nail technician, Qing Lin, who accidentally splashed nail polish remover on a customer's Prada shoe. The amount of the shoe was deducted from Qing's paycheck and she was fired. **When women are worth less than a shoe, they're not only disposable but are subject to unsafe work conditions.** Who is going to complain about these conditions? Not the women themselves. **Women who work in nail salons, auto-plastic factories, and a vast range of hazardous workplaces, "are some of the most vulnerable workers you can find.** They are poor, working-class, often immigrants who can't afford to put their immigration status at risk. And this makes them ripe for exploitation" (131).

Part-time and precarious work are more common for women and can have a particularly severe impact on them (134). Beyond unintended side effects of part-time and precarious work, there are "weaker rights intrinsic to a gig economy" (135). There is often no access to maternity leave, short notice for shifts, and inconsistent hours (135). Last-minute scheduling is harder for women who take care of people (135).

Another danger women face at work is sexual harassment. For many, it is considered "part of the job" (138). **Workplaces that are male-dominated or have male-dominated leadership are typically the worst for sexual harrassment** (137). There is a large global data gap on sexual assault in the workplace both due to lack of research and because women don't report it. Organizations do not have adequate procedures to deal with sexual assault and many women don't feel comfortable reporting due to social stigma (139).

Workplace design has a significant impact on the violence women face at work. One example is hospital designs. The typical hospital design with long hallways isolates workers and scatters them far away from one another, making them more susceptible to violence.

**From work's location, to its hours, to its regulatory standards, it has been designed around the lives of men and it is no longer fit for purpose** (142). Women's work, both visible and invisible, paid and unpaid, "is the backbone of our society and our economy" (142).

# Not-So-Fun Facts!

- In the UK, up to 70% of all unpaid dementia carers are women, and female carers are more likely to help with bathing, dressing, using the toilet, and managing incontinence (71)
- Men, on average, have more leisure time than women (depends on the country) (71)
- The UK's Health and Safety Executive revealed that women were 53% more stressed than men (73)
- Data from France, Germany, Sweden, and Turkey shows that even after accounting for social transfers that some countries employ to recognize unpaid care work, women earn between 31% and 75% less than men over their lifetimes (76-77)
- Men picture a man 80% of the time they think of a 'person' (95)
- Even though female economists publish just as much as male economists, men are twice as likely to receive tenure (97)
- After ten years of working in a job where a woman is exposed to either mammary carcinogens or an endocrine disrupting chemical, her risk of developing breast cancer increases by 42% (118)
- When Always menstrual pads were tested in 2014 they were found to include "a number of chemicals [...] that have been identified as either carcinogens or reproductive and developmental toxins" (119)
- A 2016 TUC report found that "less than 10% of women working in the energy sector and just 17% in construction currently wear PPE designed for women" (125)
- 75% of UK families on low to middle incomes work outside standard hours, but most formal day care is only available between 8am and 6pm (135)
- The UN estimates (estimates are all we have) that up to 50% of women in EU countries, 80% of women in China, and 60% of female nurses in Australia have been sexually harassed at work (137)

# PART III: DESIGN

## Chapter 7: The Plough Hypothesis

Male bias in the definition of labour leads to a substantial data gap. Historically, in farming communities where the plough was used, men dominated agriculture and this resulted in unequal societies in which men had the power and privilege. The plough, like many other devices, was built without women in mind. It's not that women aren't involved in labor, but rather their involvement looks different than men's. The Food and Agriculture Organization (FAO) determines an individual as being in the agricultural labor force if he or she reports that agriculture is their main economic activity (148). As we learned in other chapters, part-time work and unpaid care is more common for women, so it is the case that agricultural labor is not their main economic activity. This lack of acknowledgment of women's contribution to the labor force creates data gaps in efforts to better agriculture and its technology. As a result, women are further disadvantaged (150).

**Development planners across many sectors need to start consulting women.** Development agencies have been trying to introduce "clean" stoves since the 1950s (151). Traditional stoves cause indoor air pollution, which is the eighth leading contributor to the overall global disease burden (151). "Clean stoves", however, have nearly been rejected by all users. The primary users of stoves are, you guessed it, women. The clean stoves increased cooking time and required more attending which prevented women from multitasking and thus increased their workload. The recommendation from developers was to fix the women, not the stoves. **Developers and researchers eventually found success by talking to women and finding a solution based on their needs.** This exemplifies what can be achieved when designers start from the basis of closing the gender gap (156).

# Chapter 8: One-Size-Fits-Men

The "one-size-fits-men" approach to supposedly gender-neutral products is disadvantaging women in many ways (158). For example, a woman's average hand span is between seven and eight inches, which makes the standard forty-eight-inch keyboard a challenge. The size of a standard piano makes it harder for women to match the level of acclaim reached by their male colleagues and it affects their health, as they suffer disproportionately from work-related injuries (158). Apple iPhones are too big for women's hands, even though research shows women are more likely to own an iPhone than men (159). Apple developers justify that women like bigger phones because they put them in their handbags, but handbags are utilized so heavily because women's clothes lack adequate pockets (159). Voice recognition software is another example of male-biased technology. In cars, voice recognition is designed to make driving safer, but this is not the case when it doesn't work as well for women (162). Manufacturing companies' solutions are to train women so the voice recognition software works, not to redesign the software. **Our current approach to product design is making the world easier for men and harder for women** (167). The more male-biased technology is integrated, the more unequal our world becomes.

# Chapter 9: A Sea of Dudes

It's no secret that men dominate Venture Capitalists, and that, well, **"men back men"** (171). A substantial amount of tech start-ups are funded by venture capitalists, of which 93% are men (171). **When technology is targeted towards women, companies and start-ups have a harder time being taken seriously.** The breast pump industry is estimated at a value of $700 million with room to grow and products don't currently serve needs, yet investors still are not going for it (170). Ida Tin, the founder of menstrual-tracking app Clue, faced problems when finding an alternative to traditional contraception. This is because there is a lack of data around menstruation; "it has not just been overlooked but borderline actively ignored" (175). Without solid data, it's harder to convince people (ie. men) that traditional contraceptives are an issue if they don't encounter it themselves (175). The situation is a bit of a catch 22, "in a field where women are at a disadvantage specifically because they are women (and therefore can't hope to fit a stereotypically male "pattern"), data will be particularly crucial for female entrepreneurs" (175).

Just like standard keyboards and pianos, **many popular products in the tech industry that are marketed as gender-neutral are in fact male-biased** (176). Some examples: Apple's comprehensive health tracker that couldn't track periods, smartwatches that are too big for women's wrists, and VR headsets that are too big for the average woman's head. When it comes to the tech that ends up in our pockets, it all has to do with who is making the decisions (180). Across the professional computing profession in the US, 26% of jobs are held by women compared to the 57% of jobs women hold across the entire US workforce (180). In the UK, women represent 14% of the STEM workforce (180).

A more deadly data gap is cars. Men are more likely than women to be involved in a car crash, however, when a woman is in a car crash, she is 47% more likely to be seriously injured than a man, and 71% more likely to be moderately injured (186). Women are also 17% more likely to die (186). Why? Because cars design has a long history of ignoring women (186). There are a few reasons that make women more susceptible to serious injuries and death. One is that women sit further than men while driving because their legs tend to be shorter. This makes women "out of position drivers", as sitting close to the wheel is not the standard seating position. "The willful deviation from the norm" puts women at greater risk of injury or death (186). Another reason is that women have less muscle in their necks and upper torso than men which makes them more vulnerable to whiplash (186). And one of the most significant reasons is that car-crash test dummies are based on the "average" male (186). It wasn't until 2011 that the US started using a female car-crash test dummy. **When female car-crash test dummies have been used, they are just smaller male dummies and don't account for women's different muscle-mass distribution, vertebrae spacing, lower bone density, and differently swaying bodies** (188). Cars are even more dangerous for pregnant women because seatbelts are not properly designed for them (188). "Designers may believe they are making gender neutral products", but in actuality, they are mainly for men (191). "It's time to start designing women in" (191).

# Not-So-Fun Facts!

- The FAO estimates that if women had the same access to productive resources as men, yields on their farms could increase by up to 30% (149)
- Several studies have found that female pianists run an approximately 50% higher risk of pain and injury than male pianists (158)
- Rachel Tatman, a research fellow at the University of Washington found that Google's speech recognition software was 70% more likely to accurately recognize male speech than female speech (162)
- A University of Washington study similarly found that women were underrepresented on Google Images across the forty-five professions they tested, with CEO being the most divergent result: 27% of CEOs in the US are female, but women made up only 11% of the Google Image search results (165)
- According to the Guardian 72% of US CVs never reach human eyes (166)
- 93% of venture capitalists are men (171)
- A woman is 47% more likely to be seriously injured in a car crash than a man, 71% more likely to be moderately injured, and 17% more likely to die (186)
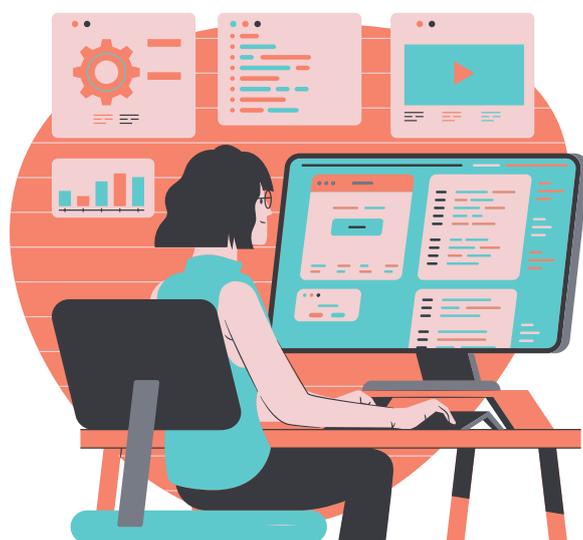
# PART IV: GOING TO THE DOCTOR

## Chapter 10: The Drugs Don't Work

It took Michelle twelve years to receive a diagnosis for her urgent, painful, frequent, and sometimes bloody bowel movements. She kept her pain a secret until she couldn't hide the pain anymore and was afraid she was dying. After confirming numerous times with multiple (male) doctors that she was not pregnant, Michelle was told to "take aspirin and rest". It wasn't until Michelle was referred to a female general practitioner that she learned that the left side of her colon was diseased and her delay in treatment increased her risk of colon cancer. Michelle's incident is more common than you may think. **Misdiagnoses are the result of a medical system that "from root to tip, is systematically discriminating against women, leaving them chronically misunderstood, mistreated, and misdiagnosed"** (195-196).

The problem begins with how doctors are trained and educated. Historically, **it was assumed that male and female bodies did not have any fundamental differences from each other** other than size and reproductive function, and so for years, **medical education has been focused on a male "norm," where everything outside of that is an anomaly** (196). This is obviously not the case. Sex differences are present in every tissue and organ system in the human body and in the severity of many human diseases (198). **Viewing female symptoms as abnormal simply because they do not conform to the male norm has serious consequences on women's health**. Pregnant women have been excluded from clinical trials and as a result, we lack proper information on how to treat them for "pretty much anything" (200). We have a duty to track and record pregnant women's health outcomes, but we are not. Why? Because female bodies (both human and animal) are considered to be too variable and burdensome (202). One reason is because of their menstrual cycles which can impact the way they respond to medication... even though most cis women menstruate so it would be worthwhile to understand these effects. One counterargument is that women are harder to recruit to participate in trials. With women doing 75% of the world's unpaid care work, this makes sense, however, it is no reason to give up.

There are many loopholes for US drug manufacturers who do not want the cost and complication of including females because the rules only apply to NIH-funded trials. Independent drug companies can "do what they want" (213). The FDA only specifies guidelines, not rules. And guidelines can be easily broken (213). A 2015 Dutch paper states that "the specific effect on women of a huge number of existing medical conditions is simply unknown" (214). **Women are dying and the medical world needs to confront its complicity** (216).

# Chapter 11: Yentl Syndrome

Yentl syndrome, named after the 1983 film where Barbara Streisand pretends to be a man in order to receive an education, describes the "phenomenon where women are misdiagnosed and poorly treated unless their symptoms or diseases conform to that of men" (217) **Women are more likely to die in the hospital than men due to a number of factors**. One being that doctors aren't spotting at-risk women, and another being that risk-prediction models are tested on majority men (218). The greatest factor to women dying from heart attacks is that their heart attacks go unnoticed by their doctors (218). A study from the UK found "**women are 50% more likely to be misdiagnosed following a heart attack**" (218). Women's heart attack symptoms are different from men's and are thus seen as "atypical". This classification leads to the under-appreciation of risk associated with these symptoms (219). The tests that doctors use are also contributing to women's higher death rates from heart attacks (219). When symptoms are listed in order of most common instead of separated by sex, "female-specific symptoms can be presented as less significant than they are in reality" (221).

Medical practice that ignores female socialization "is a widespread issue in preventative efforts" (222). Autism, ADHD, and Asperger's present differently in women than men (223). Because women are socialized to take turns in conversation, to downplay their own status, and to demonstrate behaviors that communicate more accessibility and friendliness, the traditional medical interview model may be unsuccessful in getting the information from women that are needed to diagnose them effectively (223).

In the global North, the US has the highest maternal mortality rate, "but the problem is particularly acute for African Americans" (233). "**African American women are 243% more likely than white women to die from pregnancy and childbirth-related issues**" and socioeconomic status does not better their health outcomes in comparison to white women (234). "Black college-educated mothers who gave birth in local hospitals" were more vulnerable to "severe complications of pregnancy or childbirth than white women who never graduated from high school" (234).

Women are being let down by the medical world in many ways as a result of data gaps combined with the still prevalent belief that men are the default humans. **For starters, doctors need to be trained to listen to women and recognize that their failure to accurately diagnose a woman is likely not that she is "lying or being hysterical" but that there are data gaps in their knowledge** (225). "It's time to stop dismissing women and start saving them" (235).

# Not-So-Fun Facts!

- Autoimmune diseases affect about 8% of the population, but women are three times more likely to develop one, making up 80% of those affected (198)
- Sex differences in animals have been consistently reported for nearly fifty years, and yet a 2007 paper found that 90% of pharmacological articles described only male studies (205)
- Women are 70% more likely to suffer depression than men, but animal studies on brain disorders are five times more likely to be done on male animals (205)
- An analysis of data from 22 million people from North America, Europe, Asia, and Australasia found that women from lower socio-economic backgrounds are 25% more likely to suffer from a heart attack than men in the same income bracket (217)
- 90% of women experience premenstrual syndrome (PMS) yet researchers are turned down for grants on the basis that it doesn't actually exist. Meanwhile, erectile dysfunctions affect 5-15% of men depending on age and 40% of men to some degree, and researchers have found a cure (213)
- Women are 50% more likely to be misdiagnosed following a heart attack (218)
- Women's physical pain is far more likely to be dismissed as emotional or psychosomatic (226)
- Women who are misdiagnosed and mistreated tend to have physical causes that are either exclusively female diseases or are more common in women than in men (227)
- A US analysis of 92,000 emergency-room visits between 1997 and 2004 found women had longer waiting times than men (228)

# PART V: PUBLIC LIFE

## Chapter 12: A Costless Resource to Exploit

Gross domestic product is the standard measure of a nation's economy. It is compiled from data collected in an array of surveys and represents the total value of goods and services a country produces (239). Measuring GDP is actually a very subjective process with lots of judgments and uncertainty (240). **Unpaid household work like cooking, cleaning, and childcare are obviously valuable, yet are not considered a formal part of the "economy"** (240). It is argued to be too complicated to collect and measure. Like so many of the decisions to exclude women in the interests of "simplicity" the failure to include unpaid household work "could only be reached in a culture that conceives of men as the default human and women as a niche aberration" (241). This is perhaps "the greatest gender gap of all" (241). Unpaid care work has been estimated to represent up to 50% of GDP in high-income countries and as much as 80% of GDP in low-income countries (242). In reality, women's unpaid labor is seen as a "costless resource to exploit" (244)

The failure to collect data on unpaid work can hinder development efforts (247). There are many initiatives in low-income countries to provide training programs to women that failed because they were built "on **the mistaken assumption that women have plenty of free time, backed by limited data on women's time-intensive work schedules"** (247). The best use of development funding would arguably be "the introduction of universal childcare in every country in the world" (247).

**The pay-off of unpaid work and investment of GDP in caring industries could generate up to 1.5 million jobs in the UK and 13 million in the US** (250). Society depends on unpaid work, and we need to start designing the economy around it.

# Chapter 13: From Purse to Wallet

During the evening of the UK's 2017 general election, a rumour blew up on social media. The youth turnout had increased and people felt really excited about it. People were throwing out percentages of youth turnout, but the problem was that no one had data to back up their numbers (254). This is called a "zombie stat," a statistic that "just won't die - in part because it feels intuitively right" (255). When zombie stats emerge in a context where there are data gaps, "the stat becomes harder to explode" (255). One area where data is scarce is gendered poverty statistics. Having accurate data is crucial "because **data determines how resources are allocated and bad data leads to bad resource allocation**" (256).

Gendered poverty is assessed by the relative poverty of households where a man controls the resources versus where a woman controls the resources (256). This assessment is based on two assumptions: that household resources are shared equally between household members, with everyone enjoying the same standard of living, and that there is no difference between the sexes when it comes to how they allocate resources within their households (256). When comparing male-headed households with female-headed households, there is not much difference in poverty levels. When assessed on an individual level, however, 71% of those living in poverty are women (258). "Perhaps the most damming for the validity of using household wealth to measure gendered poverty" is that the majority of women in poverty belonged to non-poor households (258). **We need to get rid of the "zombie assumptions that poverty can be determined at a household level** or that female-headed has the same implications for male poverty than male-headed has for female poverty" (258). These assumptions perpetuate the data gap and contribute to policy decisions that disadvantage women ever further (258).

In the US, many married couples file a joint tax return, even though you have the option to file individually. The system incentivizes people to do so because you get lower taxes and access to certain tax credits (258). **In practice, most married women get over-taxed**. Defenders of the joint tax return argue that the couple is paying less money in tax. A couple paying less tax, however, "doesn't mean more money in the secondary earner's pocket than if she filed individually" (259). This is because the system is based on the assumption that resources are shared equally in a household. Overall, the US tax system for married couples "penalizes women in paid employment" and "disincentivizes married women from paid work altogether (which, as we have also seen, is bad for GDP)" (259). By failing to account for differences in gender, women are discriminated against. Tax systems are created by "non-sex-disaggregated data, and male-default thinking". With our "woman-blind approach to GDP and public spending, **global tax systems are not simply failing to alleviate global poverty: they are driving it**". If we care about gender equality, it's time to "adopt an evidence-based economic analysis as a matter of urgency" (264).

# Chapter 14: Women's Rights are Human Rights

**Male-dominated governments are a significant gender data gap problem**, and evidence reveals that **female perspectives are crucial** (265). Several studies show that women are more likely to prioritize women's issues and are more likely to sponsor women's issues bills (265). Female politicians are more likely to address women's issues as well (265). In India between 1967 and 2001, a study found that a "10% increase in female political representation resulted in a 6% increase in the probability that an individual attains primary education in an urban area" (266). Decades of evidence suggest that "**the presence of women in politics makes a tangible difference to the laws that get passed**" (266).

Women face a lot of barriers to political positions; one is obtaining the votes. Before the 2016 election, the Atlantic held a focus group of undecided voters. The main sentiment was that "Hilary Clinton was just too ambitious" (266). **Being the first female president, one of the most powerful roles in the world, of course, requires ambition**. It's also pretty ambitious for a "failed businessman and TV celebrity who has no prior political experience to run for the top political job in the world" yet Trump is not criticized for his ambition, rather he is celebrated for it (267). Clinton's campaign in a male-dominated space was seen as a norm violation which "are often associated with strong negative emotion" (267). Male dominance in politics is the norm and just feels like common sense to many. Common sense, however, is "in fact just a product of the gender data gap" (270).

A word frequency analysis of Clinton's speeches found that "she mostly talked about workers, jobs, education and the economy, exactly the things she was berated for neglecting. She mentioned jobs almost 600 times, racism, women's rights, and abortion a few dozen each. Yet, "**she was assumed to be talking about gender all the time, though it was everyone else who couldn't shut up about it**" (271). Democracy is not a level playing field, it is extremely biased against electing women (271).

Improving female representation in politics is only half the battle if the women elected are prevented from doing their job effectively, which they often are (277). Women are excluded from decision-making when many of the conversations take place between men in informal spaces which women cannot access (277). They are also more likely to be interrupted or patronized (278). Politics are not a female-friendly environment. **Women receive a significantly higher amount of threats and are more susceptible to sexual violence**. As female representation goes up, "so does hostility against female politicians" (280).

The exclusion of women from positions of power creates a gender data gap at the very top. We need "**an evidence-based electoral system that is designed to ensure that a diverse group of people is in the room when it comes to deciding on the laws that govern us all**" (286).

# Not-So-Fun Facts!

- By 2017 the Women's Budget Group estimated that approximately one in ten people over the age of fifty in England (1.86 million) had unmet care needs as a result of public spending cuts (244)
- There is a 27% employment gap worldwide between men and women (246)
- Female carers are almost seven times more likely than men to cut back from full-time to part-time work (248)
- A 2010 study found that both male and female politicians are seen as power-seeking, but that this is only a problem for female politicians (268)
- A 2017 paper found that while white male leaders are praised for promoting diversity, female and ethnic minority leaders are penalized for it (271)
- A 2017 study found that men were on average more than twice as likely to interrupt women as women were to interrupt men (277-278).
- Framing human rights issues as women's rights issues makes male politicians less likely to support legislation, and if a rights bill is mainly sponsored by women, it ends up being watered down and states are less likely to invest resources (280)
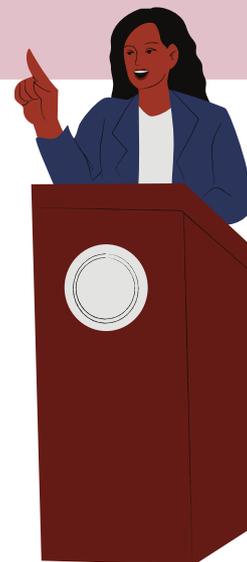
# PART VI: WHEN IT GOES WRONG

## Chapter 15: Who Will Rebuild?

When conflict occurs, whether that be a war, a natural disaster, or a pandemic, we have seen gender inequality "magnified and multiplied" everywhere (289). **If we ignore the perspectives and needs of women when things are going well, "there's something about the context of disaster, of chaos, of social breakdown that makes old prejudices seem more justified**" (290). The failure to include women in the consultation process in post-disaster efforts makes women worse off. When Hurricane Katrina hit New Orleans in 2005, African American women were the single largest category of displaced people (291). Despite being the most affected group, **African American women's voices were ignored during planning efforts**. These women's previous homes were demolished and replaced with 706 housing units compared to the 4,534 that existed prior to the hurricane (292). The new building plan did not only offer fewer units but also disrupted social infrastructure. In the original housing arrangement, women supported one another, and because "we don't measure women's unpaid work, a need to maintain such informal ties once again was not factored into rebuilding efforts" (293).

UN Security Council Resolution (UNSCR) 1325 "urges all actors to increase the participation of women and incorporate gendered perspectives in all United Nations peace and security efforts" (293). UNSCR 1325 is usually ignored on the account that women could delay negotiations, that they could be included later, or for cultural sensitivities (294). This neglect is a "symptom of a world that believes women's lives are less important than human lives, where "human" means male" (294). **Closing the data gap means more people are accounted for and society as a whole is better off**.

# Chapter 16: It's Not The Disaster That Kills You

As the title of the chapter reads, "it's not the disaster that kills you", it's "a society that fails to account for how it restricts women's lives" (301). There is very little data on the impact of conflict (mortality, morbidity, forcible displacement). **The data that does exist is rarely sex-disaggregated and does not show the disproportionate impacts on women** (296). When conflict breaks out, domestic violence against women is amplified (296). Around "60,000 women were raped in the three-month Bosnian conflict and up to 250,000 in the hundred-day Rwandan genocide" (297). Women often don't have anyone to report to so the actual figures of these conflicts are likely much higher (297). They are also more affected by the breakdown of social order which follows war. Women face extreme levels of domestic violence as a result of demobilized fighters confronting transformed gender roles at home as well as taking out the frustrations of unemployment (297).

Post-conflict and post-disaster zones are highly susceptible to the spread of infectious diseases, and studies show that **women are more likely to die when pandemics hit** (298). *Invisible Women* was published before the COVID-19 pandemic, but unsurprisingly, women are disproportionately impacted by it. According to UN Women, "the COVID-19 pandemic underscores society's reliance on women both on the front line and at home, while simultaneously exposing structural inequalities across every sphere, from health to the economy, security to social protection". Criado-Perez urges that "women's caretaking responsibilities have more deadly consequences for women in pandemics" as they do the majority of care for sick relatives at home and make up the majority of "traditional birth attendants, nurses, and cleaners" where there is high exposure risk (299). There are also drastic economic consequences for women. During the first wave of COVID-19, school and daycare shutdowns were one of the many reasons women left the labor market. Female-dominated industries like leisure and hospitality were hit the hardest by the pandemic and put many women out of work. **Women also tend to be the first ones to be let go during labor cuts** (Connley 2021). The Economist called this chain reaction "America's first female recession in 50 years". Another unsurprising fact about the COVID-19 pandemic is that not all states and countries sex disaggregate their data, so **there exists a significant data gap in the differing mortality rates and other impacts** (US Gender/Sex COVID-19 Data Tracker).

Sources:
- UN women | Explainer: How covid-19 impacts women and girls. UN Women. (2021).
- Connley, C. (2021, January 12). Coronavirus job losses are impacting everyone, but women are taking a harder hit than men. CNBC
- The Economist Newspaper. (2021). How covid-19 triggered America's first female recession in 50 years. The Economist.
- "US Gender/Sex COVID-19 Data Tracker." (2020) Harvard GenderSci Lab

For the Zika and Ebola epidemics, an analysis of 29 million papers in over 15,000 peer-reviewed titles found that "less than 1% explored the gendered impact of the outbreaks" (299). "The reluctance to factor gender into relief efforts" is in part due to the pervasive attitude that "infectious diseases affect both men and women" so "it's best to focus on control and treatment" (298).

Along with wars and pandemics, climate change is making the world more dangerous (300). In particular, our world is "nearly five times more dangerous than it was forty years ago" (300). Beyond analyses that suggest climate change can cause conflict and pandemics, "climate change itself is causing deaths" (300). **Women will likely continue to dominate the number of deaths in natural disasters** (300). Earthquake and cyclone warning systems that are male-biased put women at greater risk of dying during a natural disaster (302). **Women are extremely vulnerable to sexual violence at disaster shelters and refugee camps** in part due to the failure to provide separate bathrooms, showers, and sleeping quarters (303). We also need to recognize the exploitation and violence male authorities are inflicting upon the women they are supposed to be helping (305). **Many women are refugees because they are escaping male violence at home, yet in what are supposed to be safe spaces, women are susceptible to similar male violence** (360). Female homelessness is "not simply a result of violence" but rather a "lead predictor of a woman experiencing violence" (307).

# Afterword

"Closing the gender data gap will not magically fix all the problems faced by women, whether or not they are displaced. That would require a wholesale restructuring of society and an end to male violence. But getting to grips with the reality that gender-neutral does not automatically mean gender-equal would be an important start. And the existence of sex-disaggregated data would certainly make it much harder to keep insisting, in the face of all the evidence to the contrary, that women's needs can safely be ignored in pursuit of a greater good" (309).

# Not-So-Fun Facts!

- Countries where women are kept out of positions of power and treated as second-class are less likely to be peaceful (295)
- Women are more likely than men to die from the indirect effects of war (297)
- In Liberia during the 2014 Ebola epidemic, women were estimated to make up 75% of those who died from the disease (299)
- A 2017 report in the journal Lancet Planetary Health predicted that weather-related disasters will cause 152,000 deaths a year between 1981 and 2010 (300)
- The higher the socio-economic status of women in a country, the lower the sex gap in deaths (300)
- In the UK, homeless shelters can (and do) request free condoms from the NHS, but they cannot request free menstrual products (308)

# Discussion Questions

1. How does the gender data gap impact your daily life?

2. Can you think of other things that are "gender-neutral" in theory but are more beneficial for men in reality?

3. What makes the gender data gap so dangerous? And if it is so dangerous, why is it not talked about more?

4. What kind of language does the author use? Is it objective and dispassionate? Or passionate and earnest? Is it biased, inflammatory, sarcastic? Does the language help or undercut the author's premise?

5. Which stakeholders are working to address gender data gaps and which stakeholders are exacerbating them?

6. In what ways are trans people, non-binary people, and gender-fluid people further disadvantaged by data and algorithms? How can we ensure that spaces, products, and services are designed with all genders in mind?

7. Is there such thing as unbiased data? Is unbiased data the solution to the inequalities the author addresses?

8. How accurate are the author's findings in Chapter 16, "It's not the Disaster that kills you," in 2022?