

Summary of designs/STEM related topics to rethink

- Science textbooks
- Building designs: number of toilets based on usage/need based versus surface area allocation
- Public transportation planning, public transports to reduce overcrowdedness
- Playground design: small area segmentations
- Gendered language: how we collect data for research
- Research on pain
- Cause of cancer research passed on exposure to chemicals in everyday cleaning supplies, nail polish, plastic molding
- Building temperature regulation on comfort
- Tools that needs hands to operate: omen have 0.8 inches shorter hands than men
- Military protective equipment: boots, bullet proof vests and breasts
- PPE, uniforms, sizing for women from other races who have smaller build
- BPA in equipment
- Safer work conditions in industrial settings, ventilation
- Hospitals, ward designs
- Men's upper body mass is 40-60% higher than women 's
- Peace engineering that account for women's labor in their design for stoves
- Voice recognition to consider high pitch, accents
- AI trained on biased datasets
- Augmented reality, virtual reality equipment to design for women due to Motion sickness anticipatory control versus compensatory control
- Car design
- Circadian rhythms
- Autoimmune disease
- Gene level sex difference
- Rethinking diagnostic tools
- Design refugee camps for safety
- Gendered segregation in research

Preface and Introduction

- Anthropologists: Man the Hunter, 96% of homicide perpetrators are male. 37% of Scythian females are warriors
- Generic masculine: portray unreal differences between women and men, eg beautician
- Gender-inflicted languages: modified male terms for females (man defines females as relative to him)
- Genderless languages: cannot correct the hidden bias by emphasising the women's presence in the world. Men goes without saying, women get said at all.
- Film, statues, banknotes, news, school textbooks, video games, football, tennis, novels,

- Historical celebrity/Name recognition: art, science Rosalind Franklin, music
 - Well-behaved women seldom make history
 - Women during the American Civil War
- Identity is a potent force that we ignore and misread at our peril.
 - How a male view the world as universal and feminism as niche.
 - Identity politics: Anti-diversity, Whiteness and maleness are the default.
 - Definition of working-class: white males salary or everyone's salary
- Why is it that half the global population is considered a minority, a niche identity?

Chapter 1 Can Snow-Clearing be Sexist?

- Often lack sex-segregated data
- Public transportation: children, work
 - Transfer fares
 - Spider web versus grid lines
 - Men drive, women take public transport.
- Clearing snow for pedestrians
- Women's unpaid care work contributes \$10 trillion to annual global GDP.
- Zoning
 - Buildings, transportation to work
 - House designed to family care

Chapter 2 Gender Neutral with Urinals

- Male and female toilets cover same amount of floor space
 - Cubicles and urinals in male restrooms
 - 2.3 times longer for females
- Women as care givers
- Pregnancy
- Lack of safe female toilets in developing/underdeveloped countries
 - Sexual assault
 - Costs
 - Sanitation problems
 - Not drinking enough water
- Public spaces
 - Women are more sensitive to signs of dangers, social disorder, unkempt and abandoned buildings

- Fear in multi-story car parks
 - But in reality men are more likely to be victims of crime in public spaces
- Public transportation
 - Half the women surveyed in Canada expressed fear prevents them from using public transportation.
 - Women being harassed on public transports and sometimes give up job
- Sexual harassment is not included in crime reporting
 - [Hollaback](#), [EverydaySexism](#)
 - DC Metro found that 77% of those who were harassed never reported. Similar in Mexico. 96% in NYC
- Women aren't sure about what counts as sexual harassment
- Women don't report for societal reasons like stigma, shame, disbelieved and being blamed
 - Justified by the fact that bus drivers don't help when women ask for help/be an ally
 - On airplanes too
- "Safety and security issues and concerns are non gender specific" results from gender data gap.
- How to go about change by the transport authorities
 - Accept that there is a problem: surveys
 - Design evidence-based solutions: Women prefer guard. Men prefer cameras because they are usually not personally violated.
 - Digital timetable to know when the next bus is arriving; transparent bus shelters
 - Enable women to request stops in between official stops when it is late at night
 - No federal incentive for transit authorities to collect harassment data
 - [SafeCity](#) India. Crowd mapping platform to report places where harassment and assault took place in India.
- Gyms: free weights area
- Playgrounds research: girls don't have the confidence to compete with boys for the space in large open spaces. Smaller areas decrease female drop-off
 - More and wider entrances
 - Increase more informal activity areas.
 - Male dominated organized sports
 - Ensure money for youth is well spent for both male and female sports
 - If girls exercise before puberty, there is reduced risk of osteoporosis later in life.

Chapter 3 The Long Friday

- 90% of Icelandic women: the long Friday. Day Off.
- Housewives: There is no such thing as a woman who doesn't work - only a woman who isn't paid for her work.

- 75% of unpaid work is done by women
- Girls spend more time in housechores than boys starting from as early as 5.
- Men helping out in their home life.
- Modern day women: Women do the majority of the unpaid work irrespective of the proportion of household income they bring in.
- Female dementia carers: less support than male carers, making them vulnerable to depression, the risk factor for dementia.
- UK: men have 5 more hours of leisure time per week than women
- Contribution of male and female scientists
 - at home: 28% vs 54%
 - Parenting: 36% vs 54%
- Women's health:
 - Women do worse after heart surgery since they go back into their caregiver roles than men who will have someone take care of them
 - Single women have better recovery than married women.
 - Husbands create extra 7 hours of housework a week for women.
 - When women start to cohabitate, their housework time goes up while men's goes down.
- Work hours
 - Work mags quote research saying >40 hrs of work per week "kills"
 - But that does not account for women's housework.
 - ILO, no more than 48 hrs per week as it could incur health costs
 - Work-related Stress, Anxiety and Depression
 - At every age range: women have more than men
 - 53% more stressed than men
 - Working more than forty one hrs a week can significantly increase the probability of mental and physical health problems in women whereas it has a protective effect on men.
 - Not really - invisible work
 - Increased hospitalization and mortality rate
 - Men: "I have kids and I work full time" when women ask for Fridays off.
- Part time workers
 - Women: 75% of part timers, 42% of women
- Gender wage gap
 - Part time: 32%
 - Full time: 11%
 - 33% within 12 years after child birth
- Pension funds
 - Account for 1 year of pension contribution per child
 - Some presents part timers to be eligible
- Support working parents
 - Highest rates of female employment, hours worked and close gender wage gap
 - Length of time and amount of money matters. @Google 3 months with partial pay is not enough. Five months at full pay decreased attrition by 50%.

- With the exception of US, all industrialized countries guarantee workers paid maternity leave.
- Sweet spot if 7 to 12 months paid leave
- Brexit: anti Pregnant Workers Directive and EU's progressive direction with increased women maternity-leave
- US
 - One in four mother return to work within two weeks of giving birth
 - Doesn't guarantee at least some form of paid maternity leave
 - 85% of women have no form of paid leave
 - Taking time off mean lower social security benefits for women
- US academia
 - Tenure track
 - 7 years to attain
 - That coincide with the years that women have children
 - Married mothers with young children are 35% less likely than married father to get the tenure-track jobs
 - Among tenured faculty 70% of men are married with children compared to 44% women
 - Parents will have extra year per child to earn tenure. This gives more leg up to men as they are not throwing up, constantly going to the bathroom or breast pumping milk but have more time to do research.
 - This policy decreased women's chances by 22% and increased men's by 19%.
 - Christiane Nusslein-Volhard foundation
 - A month stipend to alleviate their domestic load for mothers
- Paternity leave
 - Sweden: nine out of ten fathers take 3 to 4 months leave.
 - Cannot be transferred to mothers
 - It has to be exclusively for men
 - Use it or lost it
 - A mother's future earning increased by 7% for every month of leave taken by a father
- Accounting for hidden male bias in the traditional workplace and work day
 - After school classes, cleaning services for home, shipping breast-milk home, take out meals, dry cleaners on campus, childcare
 - Working from home and flexible working hours will promote mothers to go back into work
- Japan: non-career track for women
- Company's expense claimable
 - \$30 to get take out for working late but not to get a sitter

Chapter 4 The Myth of Meritocracy

- Music: blind auditions
- Company performance reviews
 - Women receive personality criticisms
 - Performance related bonus or salary
- Tech industry and its institutionalised bias
 - Meritocracy over addressing structural bias
 - 40% of women who had been there for 10 years drop off
 - Left for manager behavior, workplace condition, career stalling
 - 25% women
- Academia: STEM
 - Male academics tend to think that there is no gender bias in academia
 - Female authored papers are accepted more often or rated higher under double blind review
 - Men have self cited 70% more than women
 - Women tend to cite other women than men do
 - Research done by men is associated with greater scientific quality
 - Students' biases that take time from female professors:
 - When they have emotional situations, it is their female professors and not their male professors that they tend to.
 - Deadline extensions
 - Grade boosts
 - rule-bending
 - Female academics
 - Asked to do more admin work, otherwise unlikeable
 - Honorary admin positions
 - Extra teaching work laid
 - Teaching deemed as less valuable than research
 - Teaching evaluation
 - Significantly biased against female instructors
 - Warm and accessible VERSUS authoritative or professional
 - MIT found that conventional departmental searches are biased against women
 - Many women who were eventually hired when special efforts were made would not have applied for the job.
- Brilliance bias
 - Men are more knowledgeable, objective and talented
 - The more that a field requires "brilliance" or require "raw talent", the more male dominated it is
 - Appearance: inverse correlation when it comes to female faculty. None for males
 - 5 years: same view between girls and boys about male brilliance
 - 6 years: girls start to show doubt in themselves; schools are teaching girls that they aren't as smart. They recuse themselves from activities for smart people.
 - By university, everyone is primed to think female pros to be less brilliant.qualified.

- 7-8 years: more male scientists are drawn and that difference increases as they age.
- There has been an increased in the number of female scientists being drawn (1985-2016):
 - Boys: 2.4% to 13%
 - Girls: 33% to 58%
 - This explains why male students ranked their fellow male students as more intelligent than their female counterparts.
- Recommendation letter written by faculty
 - Female students are written off as more communal such as warm, kind, nurturing or grindstone terms like hardworking.
 - Male students are described in more active language like ambitious, self confident, stand out terms like remarkable and outstanding
 - Team-player for a male is perceived as leadership quality in males but a follower for females
 - Letter of recommendation for females emphasize teaching qualities than for research.
- Female students perform better in science when their textbooks include more images of female scientists.
- Harder to unteach brilliance bias
- Female academics are more likely than males to challenge male default analysis in their work → this will close the gender data gap faster
- Computer science:
 - Obsessive, single-mindedness and immaturity...girls are less likely have that with computers while boys do.
 - Females are penalised for socialisation that males aren't
 - Women were the first computers, calculating for the military by hand.
 - ENIAC, first fully functioning digital computer was programmed by 6 women.
 - Changed happened after 1967 when employers thought programming require more problem solving skills, brilliant bias.
 - They developed hiring tools that were biased against women
 - MCQ that were about math trivia, irrelevant to programming but available through fraternity networks
 - Personality test: disinterest in people and dislike of close personal interaction in programmers
 - Online tech hiring platforms to remove human bias: looking for similarly trait of males...like those who read a particular manga site
 - Not considering how women's lives and activities differ will perpetuate already existing biases
 - Initiatives to increase female friendly work environments do not have success metrics so see if they were successful.
 - Quotas are used to weed out incompetent men rather than promote unqualified women according to London School of Economics
- Promotion procedures

- Electing themselves for promotion
 - Women don;t because they are conditioned to be modest
 - Google started making workshops to encourage women to nominate themselves
 - Average intelligent men think that they are better than two third of people so having people to elect themselves might be a bad idea.
 - 2017 six to seven std dev difference in pay between men and women in every job category
- Job searches
 - need to be careful and include stock pics of women or wording to emphasize team work to increase women applicants
 - Blind recruitment like the music industry; these increase hiring from the under-represented backgrounds.
 - Transparency and accountability on all decisions that managers used to increase salary or promote.
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Chapter 5 Henry Higgins Effect

- Henry Higgins: Henry Higgins, fictional character, a professor of phonetics who makes a bet that he can teach Cockney flower girl Eliza Doolittle how to speak proper English, My Fair Lady.
- “Why can’t a woman be more like a man?” and tries to “fix” a woman
- It takes a female leadership to experience pregnancy for reforms to be made.
- **Decrease data gap in occupational health research**
- Current offices are 5C too cold for females.
- Uncomfortable workforces means unproductivity and chronic illness.
- Caregiving and cleaning:
 - No training on lifting
 - Breast size on lifting technique
 - Musculoskeletal pain
 - Pain studies were done on male mice
- Increase in breast cancer cases and not enough research done on long term exposure to physical and chemicals in women’s work
- Reference man: 70kg, 25 to 30 years old.
- Women and men bodies differ
 - Thinner skin: lower the level of toxins to be safely exposed
 - Higher fat percentage: fat is where some some chemicals accumulate

- Radiation dosage for males is not safe for female
 - Chemical exposure testing is based on single exposure which is not how women encounter them in homes, work places, etc.
- Nail polish, home cleaning agents
 - Absorption through is different thick/thin skin
 - Inhalation
 - Endocrine disrupting chemicals (EDC) are toxic in low concentrations. These are found in plastics, cosmetic and cleaners.
 - Hodgkin's disease, multiple myeloma and ovarian cancer
- Auto-plastic moulding industry
 - Women who work there have increased likelihood of breast cancer (3 fold)
- Phthalates are endocrine disrupting
- EU regulates but no federal laws exist US
- Some green chemicals include them.
- Always menstrual pads have reproductive toxins
- Women have 0.8 inches shorter hands than men
 - Construction tools: sprains/strains, nerve conditions on wrists.
 - Architects portfolio.A1 paper or bricks are all make size.
- Military
 - Tactile situation awareness systems require hairy bony skin and not soft hairless women and can be dangerous instead for women
 - Marching strides
 - 9-10% longer in men
 - Hip and pelvic stress fractures
 - Musculoskeletal injuries
 - Women strides change with loading while males don't
 - Boots: females have narrower feet and higher arches nt accounted for yet!
- Overall uniforms
 - Need to be 2 pieces to account for women peeing and clothes removal
 - Coast guard uniforms, PPE.
 - Emergency services, construction and energy industry have only 29% PPE designed for women
 - Rail industry: size small is male small and is rare
 - Safety hardnesses do not account for ratios and chest differences
- US male face shape for dust, hazard and eye masks don't fit women, black and minority men
- Loose clothing and gloves can get stuck in machinery
- Heavy boots can make you trip
- 60% of Women's Engineering Society said PPE significantly hamper their work
- Protective vest for female officers in UK.need to be designed for women

Chapter 6 Being Worth Less Than a Shoe

- BPA (big bisphenol A)
 - 93% of Americans had it in their urine
 - Causes cancer, brain and behavioral abnormalities
 - Synthetic oestrogen causes cancer in women and BPA acts like oestrogen.
 - US is still not banning BPA while EU and Canada did
 - Women worker's cancer rates should be tracked
- Better ventilation in work places
- Need to ensure safe work spaces or check for chemicals at realistic areas in the work.
Not after ventilations
- Auto-plastic industries
 - Demanding safer work conditions mean you can be fired
- Independent contractors/alternative job arrangements
 - No guarantee hours or job security or protections that full time employees enjoy
 - Verbal and physical abuse
 - Deduct money easily without justification
 - Increase gender gap pay
 - Unpredictable and last minute shifts given. Does not help with child care search
 - Workers should get a week notice to look for care while being set on shift schedule
- Sexual harassment in male dominated fields
 - Manufacturing
 - Hospitality
 - Construction
 - Transportation
 - Health care workers by patients: Nurses
- Healthcare workers
 - Redesign hospital layouts
 - Increase workers because waiting increase violence
 - Physical violence
 - Bells to signal for help
 - Upper Management thinking less about the safety of workers when problems are brought up and solutions are being discussed.
 - Increase ways for nurses to report
 - Put up signs that say certain behaviors won't be tolerated
 - Remove last name on name tag to reduce stalking
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Chapter 7 PLOUGH HYPOTHESIS

- Men's upper body mass is 40-60% higher than women 's; plough hypothesis

- Women have lower grip strength
- Accessibility for women
- Need better survey development for labor force statistics; primary job as home maker. Secondary as paid.
- Women produce less agriculturally
- Men's appropriation of machinery
- Women are overworked and cant go to educational interventions
- Also talk to women farmers or users
- Clean stoves: more time and need more attending; teach them how great clean stoves are
- Lacks purchasing authority
- Need wood split

Chapter 8 ONE SIZE FITS MEN

- octaves in keyboard disadvantages 87% women
- Touch screen phones for men
- Voice recognition, lowering one's voice pitch, faults women
- Voice database
- Women representation in jobs in google images
- Robots trained on biased datasets, amplify our biases
- AI diagnostics

Chapter 9 A SEA OF DUDES

- Underrep of women in position of power and influence- breast pump investors
- 93% of venture capitalists are men
- Female business owners receive less investment but deliver more revenue
- Diversity leads to innovation
- Apps that track and AI
- VR haptic vest AR glasses are all men size, sports equipment, maternity, housework

- Pockets on women's clothing
- VR affected by eye mascara
- VR no hands over eye but not consider assault,
- motion sickness, men use motion parallax for depth perception while women use shapes from shading that VR is bad at
- Motion sickness anticipatory control versus compensatory control
- Car design: more injury, death

Chapter 10 THE DRUGS DON'T WORK

- A typical 70 kg man standard in doctors training, medical textbook
- Depression and alcohol
- Women are sometimes absent from clinical trials
- Heart attacks
- Only 9 in 95 medical schools offer women course
- Sex and gender related issues not covered in curriculum development
- Cigarettes, women are 20- 70% more likely to develop cancer
- Autoimmune disease: 8% of population and 80% of those who do are women, women have higher antibody responses, more adverse reactions to vaccines
- Sex difference at gene level, proteins expressions
- Cardiovascular research, HIV treatments, SARD more severe during pregnancy
- Thalidomide disability when it was used to treat morning sickness. The manufacturers knew about it but somehow the solution was to exclude women from clinical trials
- Reasons given against the inclusion: Sex differences does not matter, lack of comparable data, too complex, too variable, too costly to include; really hard to find (but they can for wrinkle correction or dental device)
- Generic drugs
- Less representation in phase one; many drugs are ruled out when it didnt work in men
- Circadian rhythms - time of day the heart attack occur affects rate of survival
 - During the day; more neutrophils respond; better survival (in males this is true while false in females)
- Female muscle-derived stem cells promote regeneration while male's don't
- Only female cells respond to oestrogen and fight off the virus.

- 2015 female Viagra had negative interactions with alcohol but recruited 23 men and 2 women.
- Gov funded trials have 50% of the trials that does sex analysis while non-gov funded ones don't
- Women should do resistance training and blood pressure drugs don't work as effectively.
- Diabetes: high intensity training does not help women
- Women's response to concussions
- NIH 1993 for clinical and 2016 for pre-clinical animal studies. Nothing in cell studies. but how are they enforced
- ¼ of drug manufacturers did not include representative number of women
- Valium: anxiety/epilepsy not tested in women
- Women take 80% of pharmaceuticals
- Gender-neutral dosages

Chapter 11 - YENTL SYNDROME

- Women are misdiagnosed unless their symptoms confirm to that of male's
- Risk predictor models
- Aspirin cannot prevent first heart attack in women; even harmful
- 'Atypical' heart attack
- Rethinking biomarkers or sensitivity level for women
- TB kills more women globally than other infectious diseases
- Accounting for female socialisation in thinking of medical interventions
- Autism; some anorexia might be a symptom of autism
- Aspergers's , ADHD
- Endometriosis
- Women are not taken seriously when they complain about pain
- Why are more women on antidepressants?
- Women are more sensitive to pain and yet are less likely to receive pain killers, longer waiting times
- Living longer does not account for ill health and disability experiences in the latter years

- Viagra - period pain relief; heart disease med that was not effective in its intended outcome (first found in 1989) 2013 couldn't apply for a larger study to test the hypothesis because of the grant review panel
- Uterine failure deaths
- Weak contractions: oxytocin which works 50% of the time; end up doing caesarian
 - They have more acid
 - Give bicarbonate of soda
 - Affects black expectant mothers 243% more likely to die than white women from pregnancy or childbirth related issues.
 - Even when controlled for socioeconomic status

Chapter 12 A COSTLESS RESOURCE TO EXPLOIT

- Gdp was created under war supportive production while sacrificing consumption
- Unpaid household work: how to measure or give value to it
 - Could make up 50% and 80% of GDP in developed and low income countries
 - A costless resource to exploit
- Unpaid childcare 20% US
- Measure Unpaid housework: Time diary
- Social budget cuts mean women have to pay in labor while rich men gain money
- If women can participate at same rate as men, global gdp will increase by \$12 trillion
- Paid employment decline after motherhood
- Training programmes for women need to account for childcare
- Eldercare: reduce work hours or quit
- Parental leave
- Social infrastructure: education, health, care services
- Early childhood education
- 54% will go back to work if there's affordable childcare
- Gender wage gap decreased with publicly funded childcare
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Chapter 13 FROM PURSE TO WALLET

- Zombie stat: spurious statistic that won't die, appeals to intuition
- Data determines how resources are allocated
- Gendered poverty data: who is the head, equal share of resources in the house
- Tax dad to pay cash to mom; substantial increase in clothes purchasing for women and children, different spending priorities
- The word children is a gender neutral term that hides inequalities
- Merging tax credits and benefits to the household head will not help

- Children from female headed households were healthier even when from a higher income
- Poverty has to be assessed at an individual level; women face poverty in non poor households
- In US, joint tax filing. Women get overtaxed, secondary earner, disincentives married women from paid labor
- Some bad couple tax policies give tax reduction on main earner as long as the woman don't earn more than xyz amount
- Impact of taxes on women
- Current idea of taxes is not that of wealth redistribution but that it hampers growth. This favors multinational companies and uber rich
- Tax harm growth when it disincentivise women from entering well paid employment
- Developing countries: multinational companies want zero taxes while getting cheap labor tax loopholes
- Switzerland: banking financial secrecy is taking a toll on women
- Consumption taxes to balance the loss in not taxing mmd company
- women might try to in house produce a good that could otherwise be purchased
- Tax systems are created on non sex disaggregated data and male default thinking

Chapter 14 WOMEN'S RIGHTS ARE HUMAN RIGHTS

- Female politicians are more likely to speak up and champion women's issues and rights
 - Increase in rep increase education investment
- Hillary Clinton: majority opinion is that her ambition is unseemly, 'pathological' norm violation
- Trump: is it unseemly when failed businessman run for the presidency
- There is this built up image that women are consumerist, trivial, irrational
- Ambitious female bosses being considered as "bitchy"
- Assertive women as "bossy"
- Warm and caring - renouncing competition with men
- If a woman wants to be competent, she has to be seen as warm
- Facial appearance influence social exclusion
- Very little of morality research examines gender, default male thinking
- A feature of human psychology to assume that our own experiences mirror that of others 'naive realism' or 'projection bias' and supported by confirmation bias
- Common sense in some ways are a product of data gender gap
- Women engaging in 'diversity-valuing behavior' people talk about it too much instead of other things the candidate also talk about
- Democracy is biased against electing women
- Women experience the world differently, women leaders bring different perspectives, needs and priorities

- All women shortlists AWS in local elections to ensure that the general election candidate is a woman
- Use of quotas is being seen as undemocratic, actually to correct hidden male bias
- Sweden zipper list of elected seats in proportional representation
- Not allowed into the back room quid pro quo networks, informal spaces
- Interrupt women
- Patronizing women, intimidation
- More representation leads to less women in leadership. More aggression by male colleagues
- When something seems pro women, men are less likely to support it
- Women protect themselves by going home early, not using online platforms or speaking up to protect their family
- Women to push on
- Learning polite interrupting skills? But not received same as when males do it
- Time quota in meetings
- Move away from majority to unanimous decision making
- In Bolivia, political violence is a criminal offense
- Have independent body deal with sexual harassment cases
- Evidence based electoral system design to bring in diverse voices in governance
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Chapter 15 WHO WILL REBUILD?

- Gender data gap problems are magnified in war, natural disasters and pandemic
- Other things seem more important
- Building homes without kitchen
- Uptown men make decisions for women, esp african american women, prioritize business over customers needs
- Large orgs like UN create rules that advocate for women's representation but little enforcement

Chapter 16 IT'S NOT THE DISASTER THAT KILLS YOU

- War or conflicts increase chance of women being raped and suffer from domestic violence, maternal mortality
- Academics don't look at gendered impact of Ebola
- Women's activities were unaccounted for like gathering fire sticks, water and fuel
- Customs that restrict women, swimming, male chaperone, tree climbing
- Shelters without restrooms
- No males in female correctional facilities

- Culture and language barrier prevent reports of rape