Shifting Gender Dynamics: A Longitudinal Study of Education, Employment, and Well-being in the United States from 1972 to 2012*

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This study presents an in-depth longitudinal analysis of gender differences in education, employment, and well-being from 1972 to 2012 in the United States. Our findings reveal that women have consistently outperformed men in educational attainment, contributing to a gradual shift towards gender parity in the workforce. However, disparities in unemployment rates and pay equity still exist, emphasizing the need for ongoing efforts to achieve true gender equality. Interestingly, women report higher levels of happiness and job satisfaction compared to men, but this should not be misinterpreted as an unequivocal indication of superior overall quality of life for women. The outcomes of this research highlight the progress made in certain aspects of gender equality, while also underscoring the importance of continued research and policy interventions to further promote equal opportunities and outcomes for individuals of all genders in society.

1 Introduction

As gender equality remains a key issue, trends and disparities in education, employment, and well-being must be studied to inform effective policy and interventions Inglehart (2003) .We investigate three key dimensions of gender differences: happiness levels, unemployment rates, and educational attainment. By analyzing sex-specific levels of happiness, we aim to uncover differences in well-being and inform potential interventions Rajen Mookerjee (2005). We will also explore unemployment rates for both men and women to address concerns about the unequal distribution of job opportunities and their social impact Greenhaus (1999). As gender

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*Code and data are available at: https://github.com/lucas11333/education-and-happiness-

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equality remains a pressing issue, it is crucial to study trends and disparities in education, employment, and well-being to inform effective policies and interventions. This paper offers a comprehensive longitudinal analysis of these key areas, assessing the progress achieved and the challenges that remain.

Our findings reveal that women have made considerable gains in educational attainment, surpassing men at most levels and contributing to gender parity in the workforce. However, despite these advances, gender disparities in unemployment persist, underscoring the need for continued efforts to achieve true gender equality. Additionally, our research found that women reported higher levels of well-being and job satisfaction compared to men, but this should not be misinterpreted as a sign of a higher overall quality of life for women.

In this article, we investigate three key dimensions of gender differences: happiness levels, unemployment rates, and educational attainment. By analyzing sex-specific levels of happiness, we aim to uncover differences in well-being and inform potential interventions. We will also explore unemployment rates for both men and women to address concerns about the unequal distribution of job opportunities and their social impact. Finally, by examining differences in the educational attainment of men and women, we contribute to the ongoing discussion around gender equality in education.

This paper is structured as follows: first, we present a review of the relevant literature, followed by a detailed description of our methodology, then we discuss our findings, and finally, we provide conclusions and recommendations for future research and policy interventions.

1.1 Data Resource

I used some R language packages, such as tidyverse Wickham et al. (2019), dplyr Wickham et al. (2023), janitor Firke (2023) , knitr Xie (2014), here Müller (2020), haven Wickham, Miller, and Smith (2022), ggplot Wickham (2016) to assist in data analysis.

1.2 Data

After cleaning the data and selecting the main variables, the following table shows the first five rows of data and their corresponding parameters.The following data section provides a more detailed explanation of the selected variables for the data.

year	age	sex	degree	work_status	job_satisfied	happy	age_range
1972	23	female	bachelor's	NA	a little dissatisfied	not too happy	age 20-39
1972	70	male	less than high school	yes	NA	not too happy	age 60-79

year	age	sex	degree	work_status	job_satisfied	happy	age_range
1972	48	female	high school	NA	moderately satisfied	pretty happy	age 40-59
1972	27	female	bachelor's	NA	very satisfied	not too happy	age 20-39
1972	61	female	high school	yes	NA	pretty happy	age 60-79

- year : This variable represents the year in which the data was collected. It is a numeric variable that can be used to track changes in the response over time. Data are recorded from 1972 to 2012. The number is an integer, recording the year.

- age : The age variable in this dataset is a quantitative variable that measures the age of each respondent at the time of data collection. It is a numeric variable with values represented as integers. As a quantitative variable, the age variable can be further analyzed using summary statistics such as mean, median, mode, and range to understand the distribution of ages in the dataset. It is important to note that this variable is measured at a single point in time, and does not account for changes in age over time. Additionally, the accuracy of the ages reported may depend on the honesty and memory of the respondents, as well as the accuracy of the data collection methods.

- sex : This variable represents the sex of each respondent. It is a categorical variable with two possible values: "male" and "female."

- degree : The degree variable in this dataset is a categorical variable that represents the highest level of education attained by each respondent. It is a nominal variable, meaning that the categories do not have an inherent order or numerical value. The degree variable has five possible values: "less than high school," "high school," "some college," "bachelor," and "graduate." As a categorical variable, the degree variable can be used to create frequency tables to understand the distribution of education levels in the dataset. Additionally, it can be used to compare other variables in the dataset across different education levels.

- work_status: This variable represents each respondent's current job status and is a categorical variable representing values in string form. Exact categories are not provided in the given data. The parameter results of the survey are 'yes', 'no', 'other'. Among them, yes means that the person is currently employed. no means no work. other means no response or other answers.

- happy : The happy variable in the dataset is a categorical variable that represents each respondent's overall level of happiness. It is an ordinal variable because the categories are ranked in a specific order, but the distance between categories may not be equal.The happy variable has five possible values: "very satisfied," "pretty happy," "mixed," "not too happy," and "unhappy." These values indicate the degree of satisfaction or happiness the respondent feels in their life.As a categorical variable, the happy variable can be used to create frequency tables to understand the distribution of happiness levels in the dataset. Additionally, it can be used to compare other variables in the dataset across

different levels of happiness. It is important to note that the categories used in the happy variable may not capture the full complexity of human emotions and well-being. Additionally, the scale of measurement and the interpretation of the categories may vary depending on the cultural context and the individual respondent's experiences and perceptions.

- job_satisfied : The job_satisfied variable in the dataset is a categorical variable that represents each respondent's satisfaction with their current job. It is an ordinal variable because the categories are ranked in a specific order, but the distance between categories may not be equal.The job_satisfied variable has five possible values: "Very Satisfied", "Somewhat Satisfied", "Mixed", "Not So Happy", and "Unhappy." These values indicate the degree of satisfaction or dissatisfaction the respondent feels with their current job.It is important to note that the categories used in the job_satisfied variable may not capture the full complexity of job satisfaction, and the interpretation of the categories may vary depending on the individual respondent's experiences and perceptions. For example, what one person considers "Very Satisfied" may be different from what another person considers the same level of satisfaction.

- age_range: The age_range variable in the dataset is a categorical variable that represents each respondent's age group. It is a nominal variable because the categories do not have an inherent order or numerical value.The age_range variable has three possible values: "age 20-39," "age 40-59," and "age 60-79." These values indicate the age range of the respondent.

2 Education

In Figure 1 , the graph illustrates the percentage of men and women who have not completed high school education between the years 1972 and 2012. Upon analyzing the data, it can be concluded that the proportion of women who have completed high school education is greater than that of men throughout the same time period.

In Figure 2, the graph displays the percentage of men and women without a bachelor's degree between 1972 and 2012. According to the data analysis, the proportion of women who hold a bachelor's degree is greater than that of men during the same time period.Furthermore, it is noteworthy that from 1972 to 1990, the proportion of men and women with undergraduate degrees was nearly identical. However, there has been a significant increase in the number of individuals pursuing a bachelor's degree since 1990, with the highest percentage of people achieving this milestone in 2005.Interestingly, the data shows a gradual decline in the proportion of men and women with a bachelor's degree since 2006.

In Figure 3 , this chart shows the percentage of individuals with a graduate degree by sex from 1972 to 2012. Overall, during this period, before 2005. The proportion of men with a master's degree is larger than that of women, but as time goes by, starting from 2005, the proportion of women with a master's degree has gradually increased. What is even more surprising is
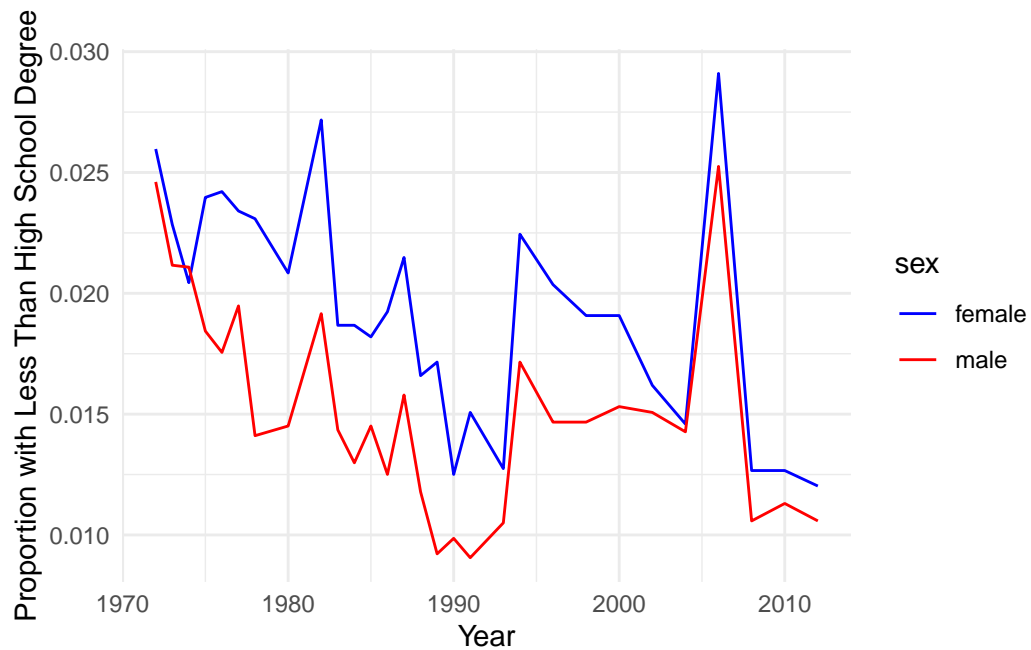
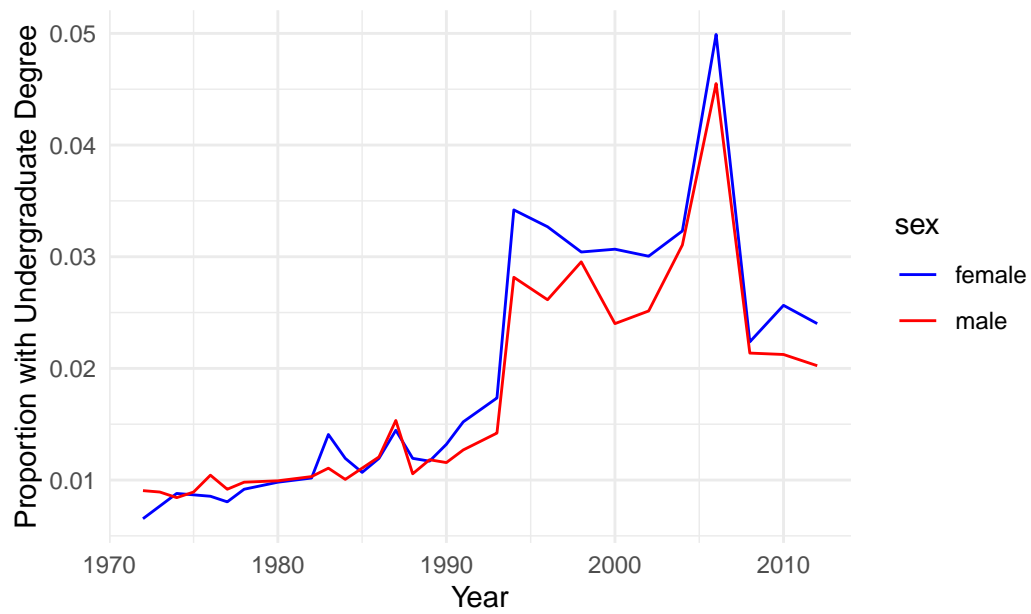Figure 1: Proportion of Men's and Women's Education that is less Than High School Degree

Figure 2: Proportion of Men's and Women's Education that is Undergraduate Degree

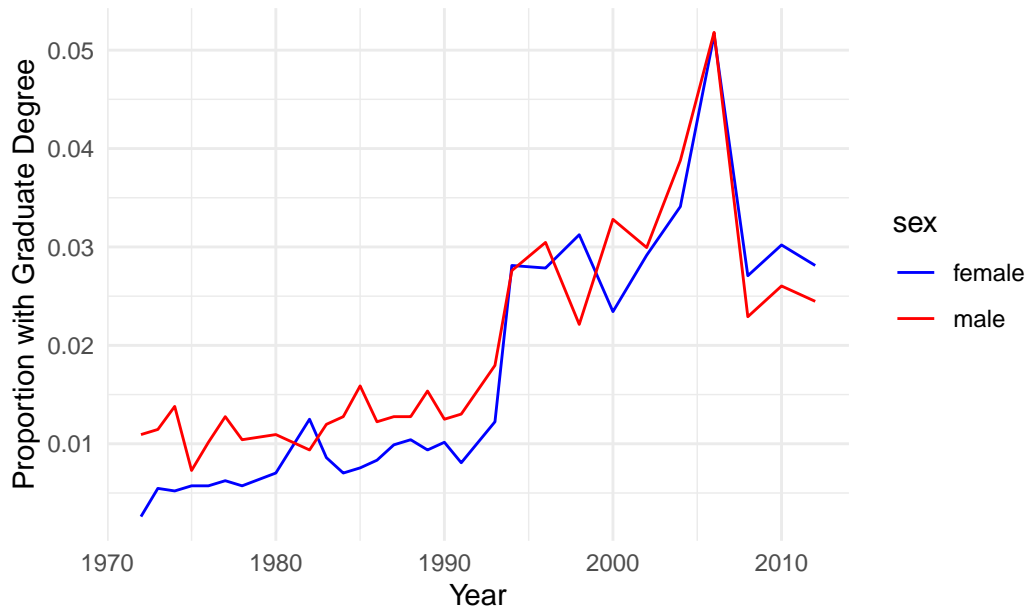that around 2009, the proportion of women with a master's degree gradually surpassed that of men Proportion.

Figure 3: Proportion of Men's and Women's Education that is Graduate Degree

3 Work

In Figure 4, over the period from 1972 to 2021, the percentage of women not working has consistently been much higher than that of men not working. However, since the year 2000, there has been a gradual increase in the proportion of men not working and a corresponding decrease in the proportion of women not working. This trend towards greater gender equality in the workplace is a positive development.

3.1 Happy

In Figure 5 , over the period from 1972 to 2012, women consistently reported feeling happier than men. The data for the years between 1975 and 1980 showed the most significant variation. During this time, the number of women reporting feelings of happiness gradually increased, while the proportion of men reporting happiness declined.
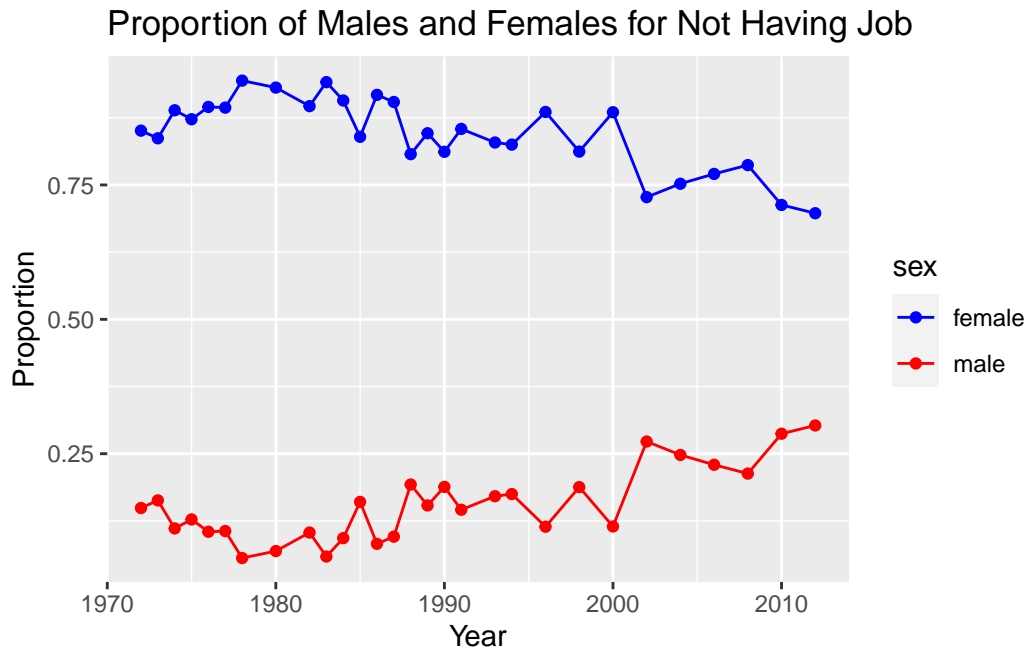
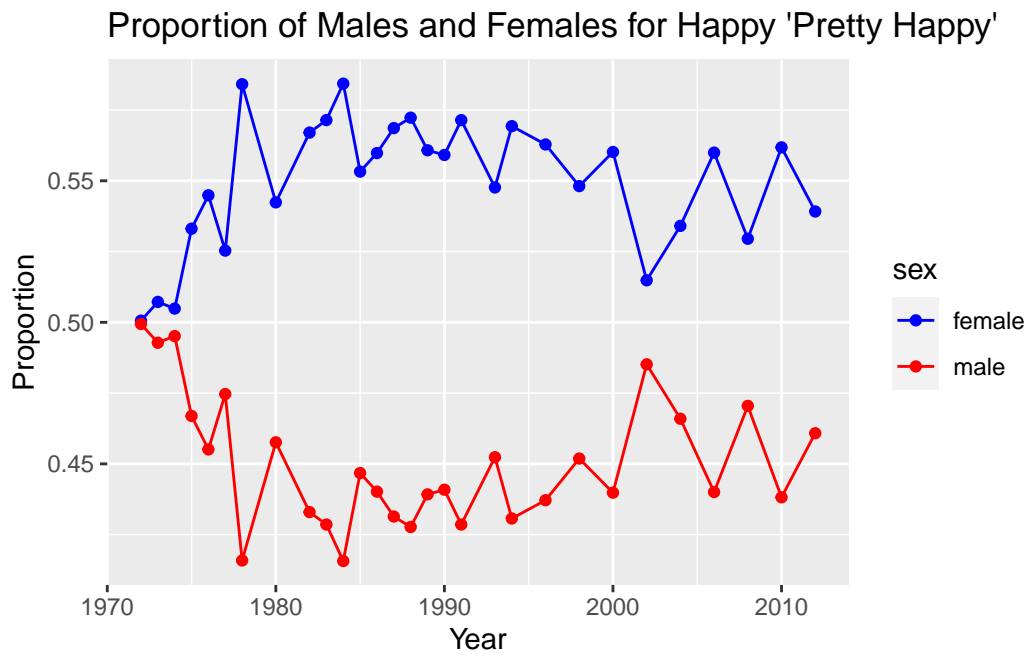Figure 4: Proportion of Males and Females for Not Having Job

Figure 5: Proportion of Males and Females for Happy 'Pretty Happy

In Figure 6, between 1972 and 2012, women tended to be more satisfied with their jobs than men, with men generally reporting lower job satisfaction levels. The lowest percentage of job satisfaction among men occurred around 1985 within the given time period.

Figure 6: Proportion of Males and Females for job_satisfied 'Very Satisfied

4 Methodology

This study will combine data sources, including surveys and academic literature. The collected data will be analyzed to determine the trends and changes in public attitudes towards sexual morality over time (1972 to 2012). The study will also examine differences in attitudes between men and women, as well as work attitudes, and the relationship between education levels and happiness in daily life.

5 Results

This longitudinal analysis provides valuable insights into the progress made towards gender equality in education, employment, and well-being over the past few decades. The study highlights the consistent trend of women outperforming men in educational attainment across all levels and the gradual increase in gender equality in the workplace. While these findings

are encouraging, it is crucial to recognize that gender disparities in pay and promotion opportunities persist, indicating that there is still significant work to be done in achieving true equality.

The study also reveals that women report higher levels of happiness and job satisfaction compared to men, which may be influenced by various factors such as work-life balance, job roles, and social expectations. As such, it is important to continue examining these aspects to better understand the complexities of gender differences in well-being.

Moving forward, researchers should focus on identifying the underlying causes of these trends and developing effective strategies to promote gender equality in all aspects of society. This will ultimately contribute to the creation of a more equitable and just society where individuals have equal access to opportunities and resources, regardless of their gender. Additionally, policymakers, educators, and employers must work collaboratively to address existing gender disparities and foster an environment that supports and values the contributions of both men and women equally.

6 Discussion

6.1 Gender Disparities in Employment: Exploring the Underlying Causes of Pay and Promotion Disparities and Identifying Strategies for Achieving True Equality.

Gender disparities in employment, particularly in pay and promotion opportunities, have been a persistent issue in many industries and countries. Despite the progress towards greater gender equality in the workplace, women are often paid less and promoted less frequently than their male counterparts.

There are several factors that may contribute to these disparities. One potential factor is unconscious bias, which can influence decisions regarding hiring, promotions, and pay. For example, managers may unconsciously favor male candidates over female candidates for leadership positions, even if both have equal qualifications and experience.

Another factor is the prevalence of traditional gender roles and stereotypes, which can lead to the undervaluation of women's work and skills. Women may be perceived as less competent or less committed to their careers, particularly if they are also responsible for caregiving and household tasks. This perception can translate into lower pay and fewer opportunities for advancement.

Additionally, the lack of work-life balance policies and support can also contribute to gender disparities in employment. Women often bear a disproportionate burden of caregiving responsibilities, which can limit their availability for work-related tasks and hinder their opportunities for career growth. The absence of flexible work arrangements, such as remote work or job sharing, can exacerbate this issue.

To address these disparities, further research is needed to identify effective strategies for achieving true equality in the workplace. Possible solutions could include implementing unconscious bias training for managers, promoting diversity and inclusion initiatives, implementing family-friendly policies such as parental leave and flexible work arrangements, and increasing transparency in pay and promotion decisions.

Overall, addressing gender disparities in employment requires a multifaceted approach that involves identifying and addressing the underlying causes of these disparities. By working towards greater gender equality in the workplace, we can create a more equitable and just society where everyone has equal opportunities and access to resources regardless of their gender.Second discussion point

6.2 Gender Roles and Social Expectations: Exploring their Impact on Well-being and Strategies for Creating a More Equitable Society.

Gender roles and social expectations are deeply ingrained in our societies, influencing everything from personal relationships to career choices. These expectations can have a significant impact on individuals' well-being, particularly when it comes to mental health, job satisfaction, and overall quality of life.

While the finding that women report higher levels of happiness and job satisfaction than men is noteworthy, it is important to acknowledge that this does not necessarily reflect an overall better quality of life. Gender roles and social expectations can create unique challenges and barriers for individuals of different genders.

For women, traditional gender roles often require them to take on a disproportionate share of household and caregiving responsibilities, which can limit their opportunities for career advancement and contribute to feelings of stress and burnout. This can have a negative impact on their mental health and overall well-being.

Men, on the other hand, may face pressure to conform to traditional expectations of masculinity, which can lead to feelings of isolation, anxiety, and depression. Men may also face societal expectations that they be the primary breadwinners for their families, which can create stress and anxiety related to work and financial stability.

To create a more equitable and fulfilling society for all genders, it is important to challenge traditional gender roles and social expectations. This can include promoting gender equality in the workplace, implementing policies that support work-life balance and caregiving responsibilities, and encouraging men to take on a greater share of household responsibilities. Additionally, promoting mental health awareness and reducing stigma around seeking help can help individuals of all genders to achieve greater well-being.

Further exploration of the impact of gender roles and social expectations on well-being can provide insights into strategies for promoting greater gender equality and creating a more equitable and fulfilling society for all.

6.3 Implications of Gender Differences in Educational Attainment: Exploring the Benefits and Drawbacks of the Gender Gap and Strategies for Ensuring Equal Access to High-Quality Education.

The gender gap in educational attainment, with women consistently outperforming men, has significant implications for the workforce and society as a whole. While the trend towards greater educational attainment for women is undoubtedly positive, it is important to explore the potential benefits and drawbacks of this gender gap in education and identify strategies to ensure that all genders have access to high-quality education and opportunities for personal and professional growth.

One potential benefit of women's higher educational attainment is the potential for increased gender diversity in the workforce. As more women enter fields traditionally dominated by men, there may be a greater diversity of perspectives and ideas, which can contribute to more innovation and creativity in the workplace. Additionally, greater educational attainment for women can lead to increased economic opportunities, higher earning potential, and greater financial stability, which can benefit both women and their families.

However, there may also be potential drawbacks to the gender gap in educational attainment. For example, the concentration of women in certain fields, such as education and healthcare, may reinforce traditional gender roles and stereotypes, limiting opportunities for women in other fields. Additionally, if men continue to lag behind in educational attainment, it could contribute to a widening gender pay gap and further reinforce gender inequalities in the workforce.

To ensure that all genders have access to high-quality education and opportunities for personal and professional growth, it is important to identify strategies that address the root causes of gender disparities in education. This may include promoting gender equality in educational settings, implementing policies that support students from diverse backgrounds, and encouraging more men to pursue higher education and non-traditional fields.

Additionally, it is important to address the structural barriers that may prevent individuals from accessing high-quality education, such as financial barriers, lack of mentorship and guidance, and systemic biases in educational institutions. By promoting equal access to education for all genders, we can create a more equitable and just society where everyone has the opportunity to reach their full potential.

6.4 Weaknesses and next steps

Weaknesses:

- The study relied on self-reported data for measuring job satisfaction and well-being, which can be subject to bias and inaccuracy.

- The study did not explore the intersection of gender with other demographic factors, such as race, ethnicity, and socioeconomic status, which could provide a more nuanced understanding of gender disparities.

- The study only focused on trends in the United States and may not be generalize to other countries or cultures.

- The study did not examine the impact of gender stereotypes and discrimination on education, employment, and well-being, which are important factors contributing to gender disparities.

Next steps:

- Future research could explore the intersection of gender with other demographic factors to better understand the unique challenges faced by different groups of individuals.

- Further investigation is needed to identify effective strategies for addressing gender disparities in pay and promotion opportunities in the workplace.

- Research should examine the impact of gender stereotypes and discrimination on education, employment, and well-being to develop interventions aimed at reducing these negative effects.

- Longitudinal studies that track changes over time could provide valuable insights into the effectiveness of policies and programs aimed at promoting gender equality.

Appendix

A Additional details

A.1 Additional Graph

From the chart, among the collected data, the number of women will be more than the number of men. The number of women is around 30,000, compared to around 25,000 men.

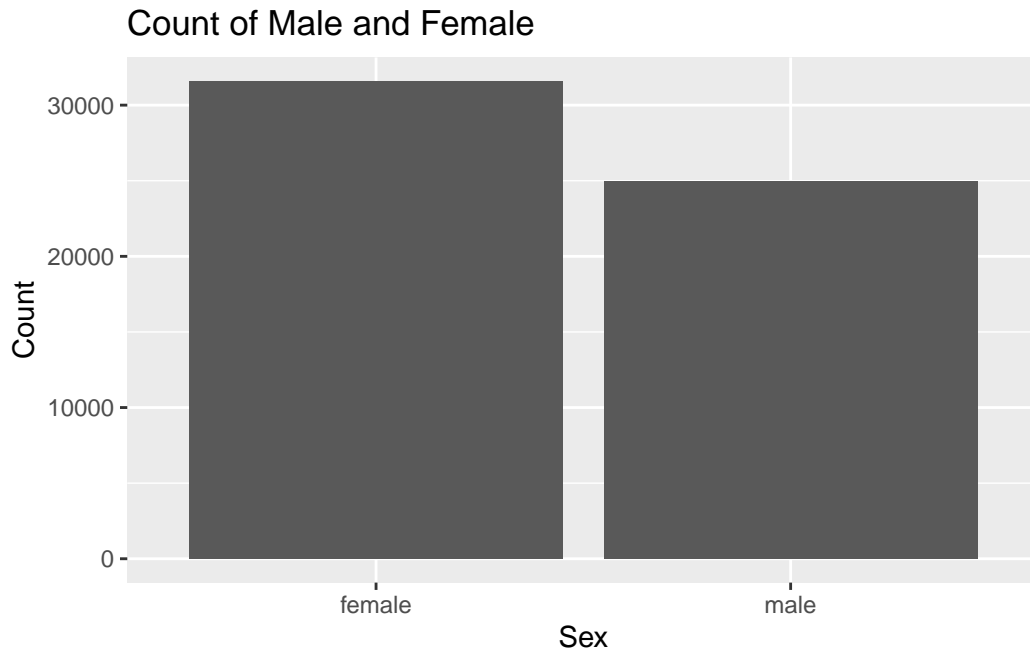## Count of Male and Female

Figure 7: count of Males and Females

From the graph, the ratio of males to females is basically the same, and the data collected in 2006 is probably the most.

A.2 Supplenmentary Survey

A.2.1 Survey Question

Welcome to this survey on gender differences and equality in education, employment, and well-being. Your participation is crucial in helping us gain a deeper understanding of the factors that contribute to gender disparities and the potential strategies for promoting gender equality in various aspects of life. By answering the following questions, you will provide
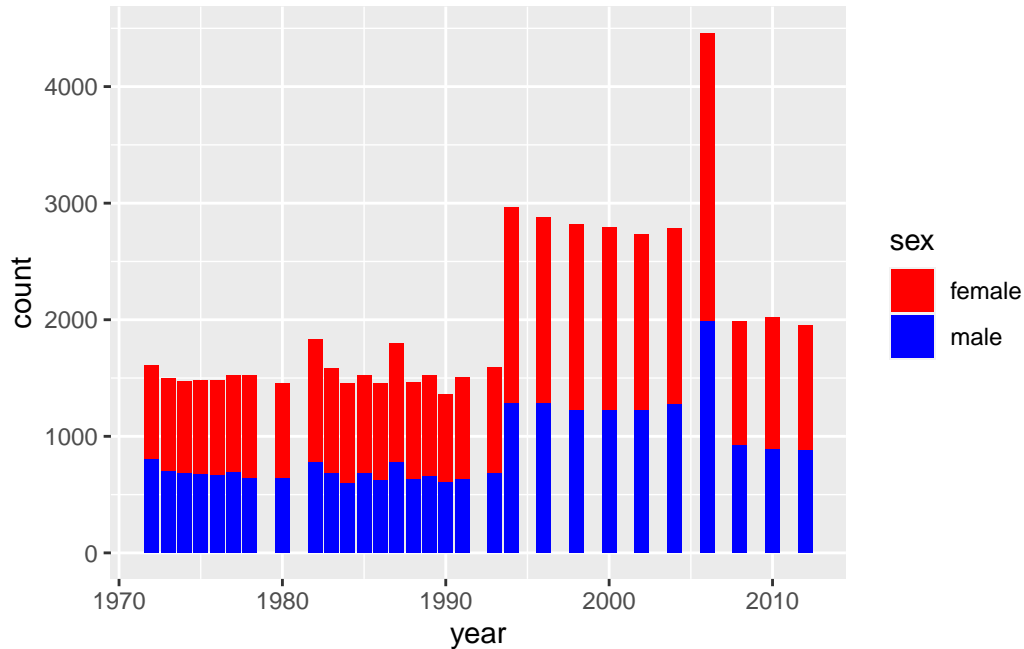
Figure 8: count of Males and Females with year

valuable insights that can be used to inform policies and initiatives aimed at creating a more inclusive and equitable society for all. Please note that your responses will remain confidential and will be used solely for research purposes. We appreciate your time and effort in completing this survey.

Contact Information: If you have any questions or concerns about this survey, please feel free to contact the research team:

NAME : SHAOHAN CHANG Institution/Department : Department of statistics (University of Toronto) Email Address : shaohan.chang@utoronto.ca

A.2.1.1 1. What is your gender?

A. Male B. Female C. Non-binary D. Prefer not to say E. Other (please specify)

A.2.1.2 2. What is your age group?

A. 18-24 B. 25-34 C. 35-44 D. 45-54 E. 55-64 F. 65 or older

A.2.1.3 3.What is the highest level of education you have completed?

A. High school diploma or equivalent B. Some college or vocational training C. Bachelor's degree D. Master's degree E. Doctorate or higher

A.2.1.4 4. Are you currently employed?

A. Yes, full-time B. Yes, part-time C. No, but looking for work D. No, not looking for work

A.2.1.5 5. How satisfied are you with your current job or career?

A. Very satisfied B. Somewhat satisfied C. Neither satisfied nor dissatisfied D. Somewhat dissatisfied E. Very dissatisfied

A.2.1.6 6.How do you perceive your work-life balance?

A. Excellent B. Good C. Fair D. Poor E. Very poor

A.2.1.7 7. In your opinion, how important is it to promote gender equality in the workplace?

A. Extremely important B. Very important C. Moderately important D. Slightly important E. Not at all important

A.2.1.8 8.Have you ever experienced or witnessed gender-based discrimination in the workplace?

A. Yes B. No C. Prefer not to say

A.2.1.9 9.What strategies do you think are most effective in promoting gender equality in the workplace? (Please select all that apply)

A. Equal pay for equal work B. Flexible work arrangements C. Diversity and inclusion training D. Mentorship programs E. Transparent promotion processes F. Other (please specify)

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