Looker Final Matrix & Charts

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Visual Analytics Matrix Table

#	Hypothesis	Question	Analytic Type	Variable(s)	Chart	Conclusion
1	Education can impact women's political standing.	Is there an association between national income level and proportion of seats held by women in national parliaments?	Predictive	1. Tertiary pupil-teacher ratio 2. Proportion of seats held by women in national parliaments Control variable: Income group	Tree map	There is no clear relationship between the Tertiary Pupil-Teacher Ratio and the Proportion of Seats Held by Women in National Parliaments across different income groups
2		Is there an association between compulsory education duration and proportion of seats held by women in national parliaments?	Predictive	1. Compulsory education duration 2. Proportion of seats held by women in national parliaments Control variables: Country name, Income group	Symbol map	Countries with longer compulsory education durations generally have a higher proportion of seats held by women in national parliaments.
3		Is there an association between government expenditure on education and proportion of seats held by women in national parliaments?	Descriptive	1. Government expenditure on education 2. Proportion of seats held by women in national parliaments Control variables: Country name, Income group	Symbol map	There is a slight positive correlation between government expenditure on education and the proportion of seats held by women in national parliaments, particularly in higher-income countries.
4		Is there an association between tertiary school enrollment and proportion of seats held by women in national parliaments?	Predictive	1. Tertiary school enrollment 2. Proportion of seats held by women in national parliaments Control variable: Income group	Line chart	There is a weak negative correlation between Tertiary School Enrollment and the Proportion of Seats Held by Women in National Parliaments.
5	The quality of education can have an impact on the level of equality that women experience in the workplace.	Is there an association between government expenditure on education and female employment to population ratio?	Descriptive	1.Government expenditure on education 2. Female employment to population ratio Control variable: Income group	Bar chart	There is no clear pattern or relationship between government expenditure on education and female employment-to-population ratio across different income groups.
6		Is there an association between tertiary school enrollment and female employment to population ratio?	Descriptive	1.Tertiary school enrollment 2. Female employment to population ratio Control variable: Income group	Bar chart	There is no clear pattern or relationship between tertiary school enrollment and female employment-to-population ratio across different income groups.
7		Is there an association between female academic	Predictive	1. Female academic staff in tertiary education	Line chart	There is a weak negative correlation

		staff in tertiary education and female employment to population ratio?		2. Female employment to population ratio Control variable: Income group		between the proportion of Female Academic Staff in Tertiary Education and the Female Employment-to-Population Ratio.
8		Is there an association between tertiary pupil-teacher ratio and female employment to population ratio?	Descriptive	1. Tertiary pupil-teacher ratio 2. Female employment to population ratio Control variable: Income group, Year	Discrete Line chart	There is no clear relationship between the tertiary pupil-teacher ratio and female employment-to-population ratio over time across different income groups.
9	National level of efforts education can impact the fertility rate.	Is there an association between national income level and fertility rate?	Descriptive	1. Female academic staff in tertiary education 2. Fertility rate Control variable: Income group, Year	Side By Side Circle Chart	There is no clear pattern or relationship between female academic staff in tertiary education and fertility rate over time across different income groups.
10		Is there an association between compulsory education duration and fertility rate?	Descriptive	1. Compulsory education duration 2. Fertility rate Control variables: Country name, Income group	Bubble chart	Countries with longer compulsory education duration tend to have lower fertility rates.
11		Is there an association between government expenditure on education and fertility rate?	Predictive	1. Government expenditure on education 2. Fertility rate Control variables: Country name, Income group	Tree map	There is no clear pattern or relationship between government expenditure on education and fertility rate across different income groups.
12	The quality of education received by women can have an influence on their mortality rate.	Is there an association between tertiary school enrollment and female mortality rate?	Predictive	1.Tertiary school enrollment 2. Female mortality rate Control variables: Country name, Income group	Bubble chart	Higher tertiary school enrollment is generally associated with lower female mortality rates.
13		Is there an association between female academic staff in tertiary education and female mortality rate?	Descriptive	1. Female academic staff in tertiary education 2. Female mortality rate Control variables: Year, Income group	Dual line chart	No clear pattern or relationship is observed between female academic staff in tertiary education and female mortality rate over time across different income groups.
14		Is there an association between tertiary pupil-teacher ratio and female mortality rate?	Descriptive	1. Tertiary pupil-teacher ratio 2. Female mortality rate Control variables: Year, Income group	Side By Side bar Chart	There is a slight positive relationship between Tertiary Pupil-Teacher Ratio and Female Mortality Rate over time.
15	National level of efforts on education	Is there an association between income group and	Predictive	1. Tertiary school enrollment	Scatter plot	A positive correlation is observed between

	can have an impact on their life expectancy at birth.	female life expectancy at birth?		2. Female life expectancy at birth		tertiary school enrollment and female life expectancy at birth.
16		Is there an association between compulsory education duration and female life expectancy at birth?	Descriptive	1. Compulsory education duration 2. Female life expectancy at birth Control variables: Year, Income group	Line-bar-combination chart	There is a significant relationship between Compulsory Education Duration and Female Life Expectancy at Birth over time.
17		Is there an association between government expenditure on education and female life expectancy at birth?	Predictive	1. Government expenditure on education 2. Female life expectancy at birth Control variables: Country name, Income group	Side By Side bar Chart	There is a significant relationship between Government Expenditure on Education and Female Life Expectancy at Birth by country.
18	The standard of education that women receive can affect the proportion of females who attain wage and salary equality.	Is there an association between tertiary school enrollment and female wage and salaried workers?	Descriptive	1. Tertiary school enrollment 2. Female wage and salaried workers Control variables: Income group	Scatter plot	There is a positive relationship between tertiary school enrollment and female wage and salaried workers, with a high R-squared value of 0.449763.
19		Is there any association between female academic staff in tertiary education and female wage and salaried workers?	Descriptive	1. Female academic staff in tertiary education 2. Female wage and salaried workers Control variables: Income group, Year	Line-bar-combination chart	There is a noticeable increase in both Female Academic Staff in Tertiary Education and Female Wage and Salaried Workers over time, indicating a positive correlation between these two variables.
20		Is there any association between tertiary pupil-teacher ratio and female wage and salaried workers?	Predictive	1. Tertiary pupil-teacher ratio 2. Female wage and salaried workers Control variables: Country name, Income group	Side By Side Circle Chart	No clear pattern or relationship is observed between the tertiary pupil-teacher ratio and female wage and salaried workers across different income groups.
21	The 5 independent variables have strong association with female life expectancy at birth.	Is there any association between 5 independent variables(Compulsory education duration, Government expenditure on education, Tertiary school enrollment, Female academic staff in tertiary education, Tertiary pupil-teacher ratio) and female life expectancy at birth?	Predictive	1. Compulsory education duration 2.Government expenditure on education 3.Tertiary school enrollment 4.Female academic staff in tertiary education 5.Tertiary pupil-teacher ratio 6.Female life expectancy at birth Control variable: Income group	Linear Regression	Tertiary school enrollment is the most significant variable to Female life expectancy at birth with predictor importance=0.38 ANOVA table: Regression Sum of Squares=10.485, df=5, Regression Mean Square=2.097, F value=155.407, Significance<0.001

22	The 5 independent variables have strong association with female wage and salaried workers.	Is there any association between 5 independent variables(Compulsory education duration, Government expenditure on education, Tertiary school enrollment, Female academic staff in tertiary education, Tertiary pupil-teacher ratio) and female wage and salaried workers?	Predictive	1. Compulsory education duration 2.Government expenditure on education 3.Tertiary school enrollment 4.Female academic staff in tertiary education 5.Tertiary pupil-teacher ratio 6. Female wage and salaried workers Control variable: Income group	Neural Network	Tertiary pupil-teacher ratio is the most significant variable to Female wage and salaried workers with predictor importance=0.21
23	The 5 independent variables have strong association with female fertility rate.	Is there any association between 5 independent variables(Compulsory education duration, Government expenditure on education, Tertiary school enrollment, Female academic staff in tertiary education, Tertiary pupil-teacher ratio) and female fertility rate?	Predictive	1. Compulsory education duration 2.Government expenditure on education 3.Tertiary school enrollment 4.Female academic staff in tertiary education 5.Tertiary pupil-teacher ratio 6.Femal fertility rate Control variable: Income group	Random Forest	Female academic staff in tertiary education is the most significant variable to Female fertility rate with predictor importance=0.52

Charts

Figure1. Tertiary Pupil-Teacher Ratio vs. Women in Parliaments by Income Group

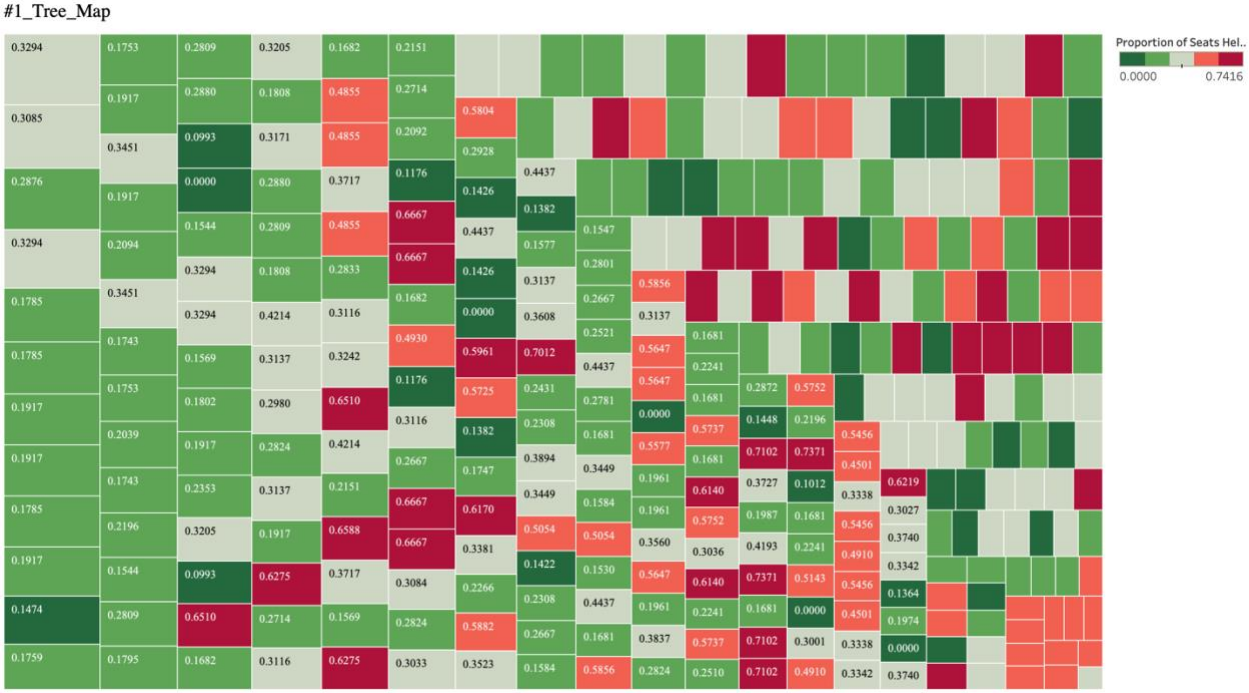


Figure 1: Tree Map of Tertiary Pupil-Teacher Ratio and Proportion of Seats Held by Women in National Parliaments, controlling for Income Group.

A. The chart shows the relationship between the Tertiary Pupil-Teacher Ratio and the Proportion of Seats Held by Women in National Parliaments, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between the Tertiary Pupil-Teacher Ratio and the Proportion of Seats Held by Women in National Parliaments across different income groups.
C. Implication: Other factors may have a more significant impact on the proportion of women in national parliaments than the Tertiary Pupil-Teacher Ratio.

Figure2. Compulsory Education Duration vs. Women in Parliaments by Income Group

<#2_SymbolMap>

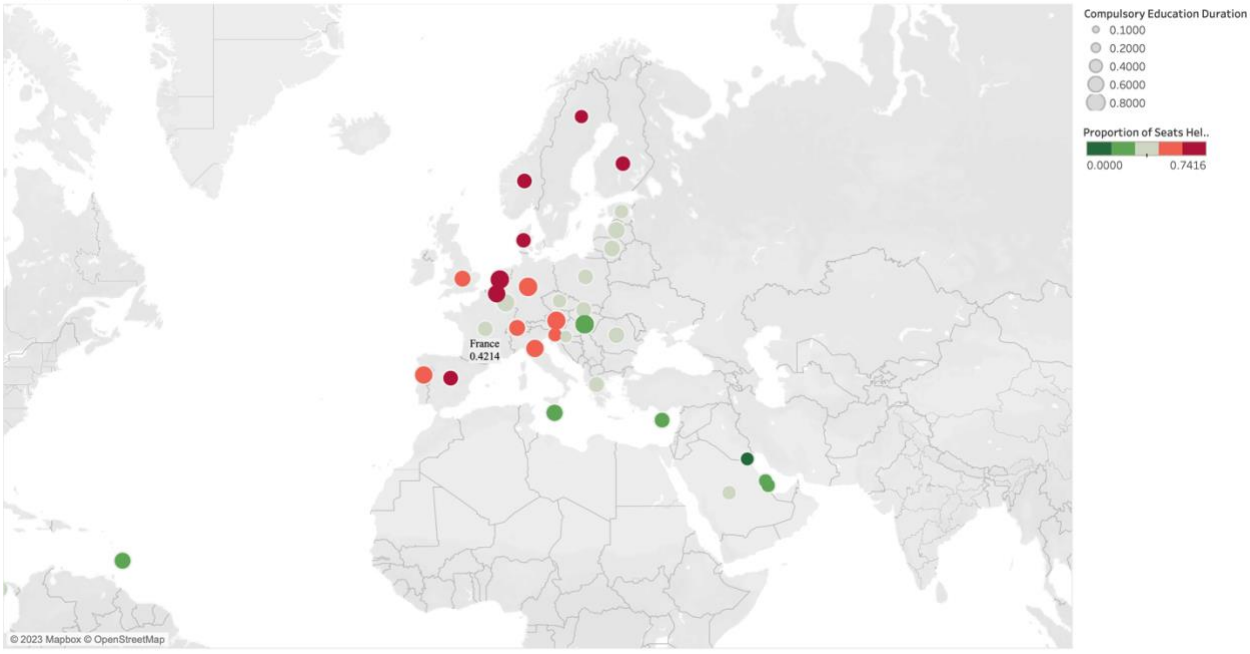


Figure 2: Map of Compulsory Education Duration and Proportion of Seats Held by Women in National Parliaments, controlling for Income Group.

A. The chart shows the relationship between Compulsory Education Duration and the Proportion of Seats Held by Women in National Parliaments, with Income Group as a control variable.
B. Insight: Countries with longer compulsory education durations generally have a higher proportion of seats held by women in national parliaments.
C. Implication: Improving access to education may contribute to increased female representation in politics.

Figure3. Government Expenditure on Education vs. Women in Parliaments by Income Group

Figure 3: Map of Government Expenditure on Education and Proportion of Seats Held by Women in National Parliaments, controlling for Income Group.

A. The chart shows the relationship between Government Expenditure on Education and the Proportion of Seats Held by Women in National Parliaments, with Income Group as a control variable.
B. Insight: There is a slight positive correlation between government expenditure on education and the proportion of seats held by women in national parliaments, particularly in higher-income countries.
C. Implication: Investing in education may have a positive effect on female representation in politics, but other factors should be considered as well.

Figure4. Tertiary School Enrollment vs. Women in Parliaments by Income Group

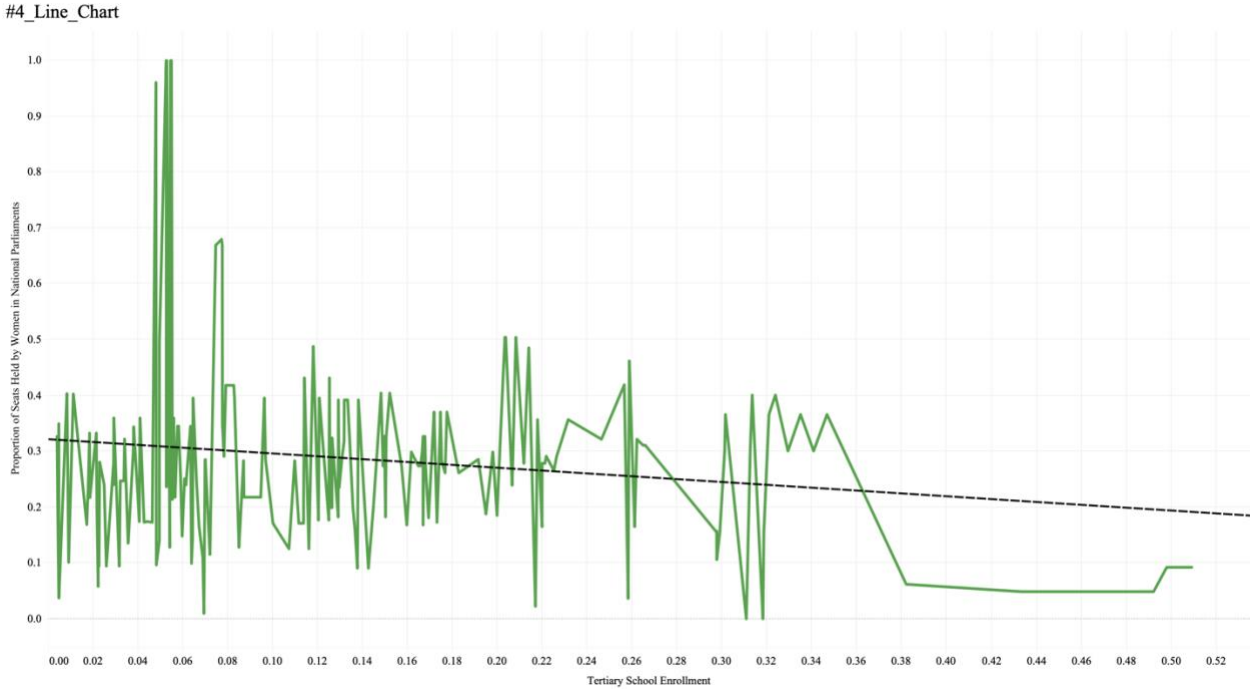


Figure 4: Line chart of Tertiary School Enrollment and Proportion of Seats Held by Women in National Parliaments, controlling for Income Group, with regression trend line.

A. The chart shows the relationship between Tertiary School Enrollment and the Proportion of Seats Held by Women in National Parliaments, with a trend line indicating the correlation.
B. Insight: There is a weak negative correlation between Tertiary School Enrollment and the Proportion of Seats Held by Women in National Parliaments. As Tertiary School Enrollment increases, the Proportion of Seats Held by Women in National Parliaments slightly decreases.
C. Implication: The weak negative correlation suggests that factors other than Tertiary School Enrollment might have a more significant impact on the Proportion of Seats Held by Women in National Parliaments. Further investigation into additional factors is necessary to understand the dynamics of female representation in politics better.

Figure5. Government Expenditure on Education vs. Female Employment-to-Population Ratio by Income Group

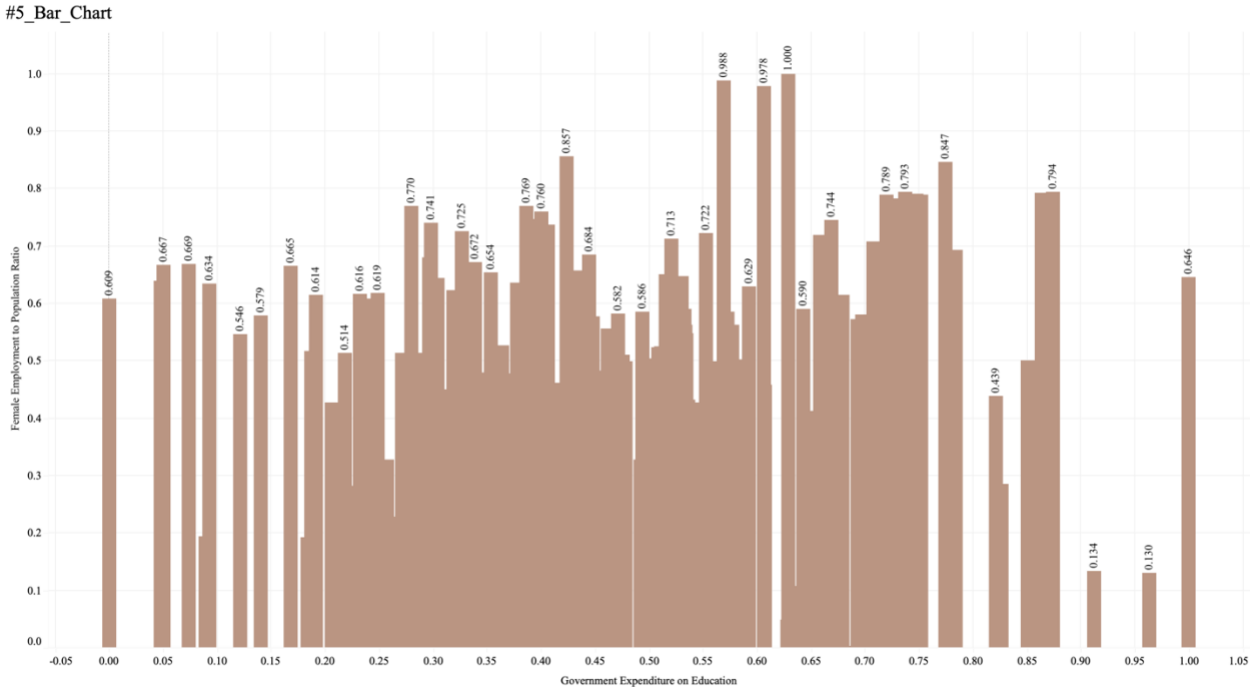


Figure 5: Bar chart of Government Expenditure on Education and Female Employment-to-Population Ratio, controlling for Income Group.

A. The chart shows the relationship between Government Expenditure on Education and the Female Employment-to-Population Ratio, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between government expenditure on education and female employment-to-population ratio across different income groups.
C. Implication: Other factors may have a more significant impact on female employment-to-population ratio than government expenditure on education alone.

Figure6. Tertiary School Enrollment vs. Female Employment-to-Population Ratio by Income Group

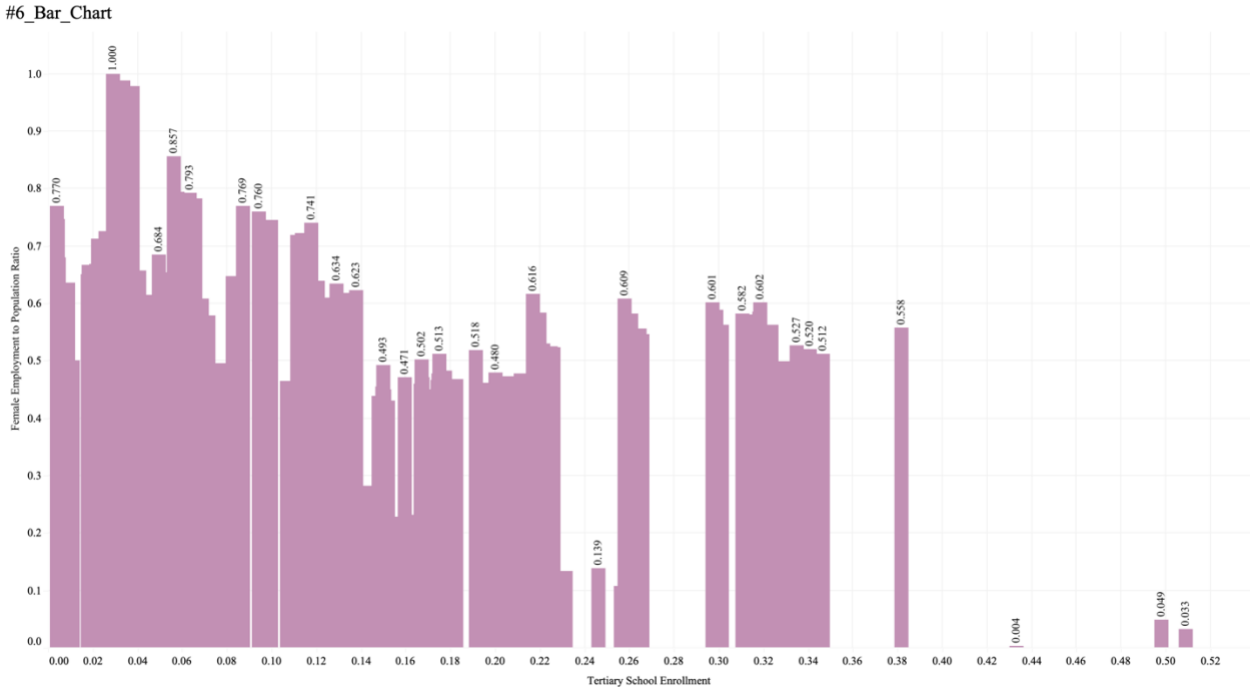


Figure 6: Bar chart of Tertiary School Enrollment and Female Employment-to-Population Ratio, controlling for Income Group.

A. The chart shows the relationship between Tertiary School Enrollment and the Female Employment-to-Population Ratio, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between tertiary school enrollment and female employment-to-population ratio across different income groups.
C. Implication: Factors other than tertiary school enrollment may play a more significant role in influencing the female employment-to-population ratio.

Figure7. Female Academic Staff in Tertiary Education vs. Female Employment-to-Population Ratio by Income Group

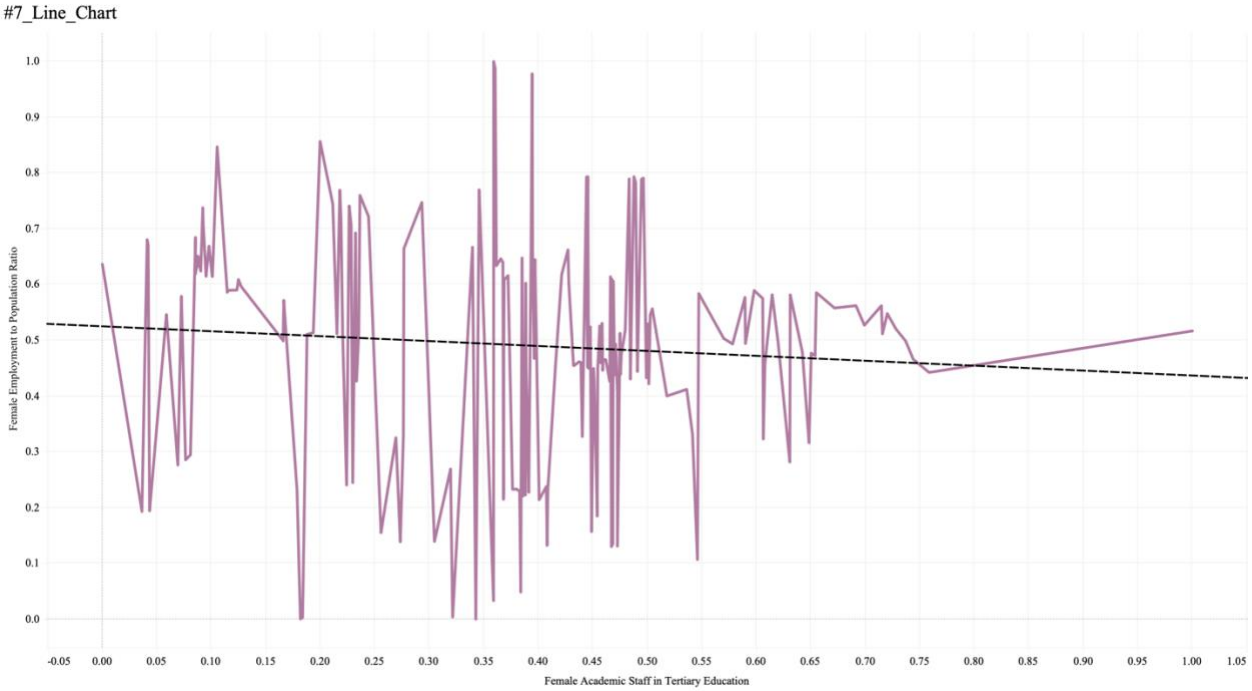


Figure 7: Line chart of Female Academic Staff in Tertiary Education and Female Employment-to-Population Ratio, controlling for Income Group, with regression trend line.

A. The chart shows the relationship between Female Academic Staff in Tertiary Education and Female Employment-to-Population Ratio, with a trend line indicating the correlation.
B. Insight: There is a weak negative correlation between the proportion of Female Academic Staff in Tertiary Education and the Female Employment-to-Population Ratio. As the proportion of Female Academic Staff in Tertiary Education increases, the Female Employment-to-Population Ratio slightly decreases.
C. Implication: The weak negative correlation suggests that factors other than Female Academic Staff in Tertiary Education might have a more significant impact on Female Employment-to-Population Ratio. Further investigation into additional factors is necessary to understand the dynamics of female employment better.

Figure8. Tertiary Pupil-Teacher Ratio vs. Female Employment-to-Population Ratio by Income Group

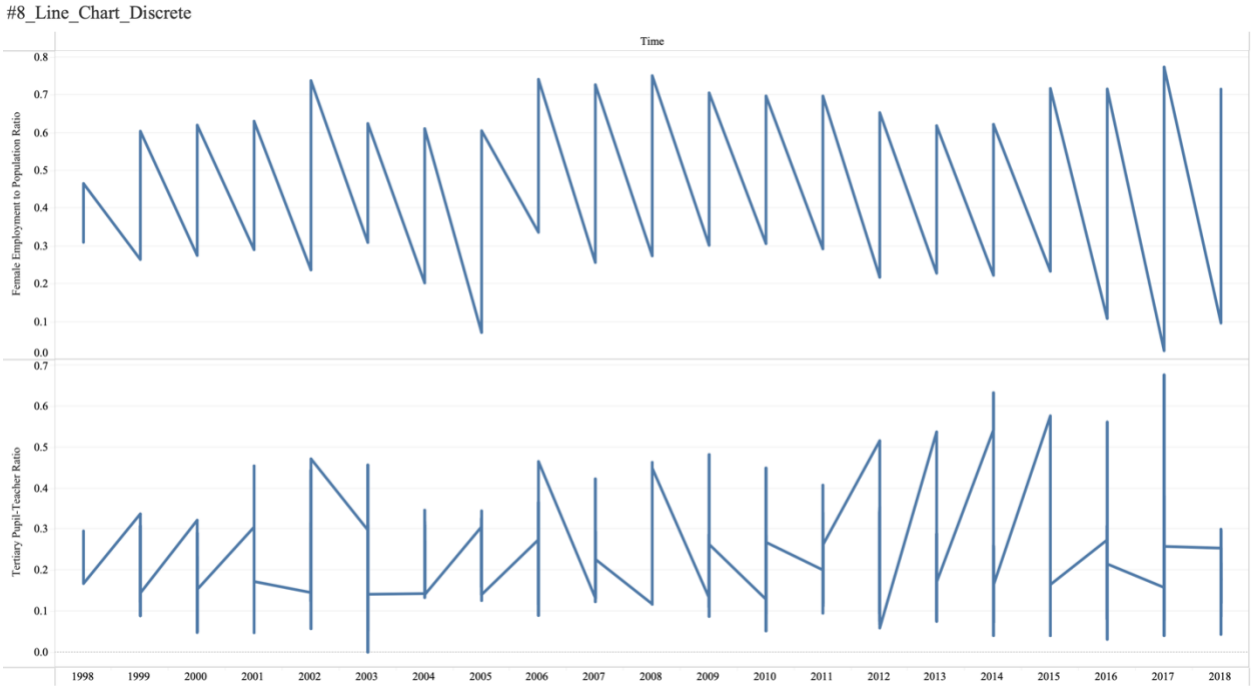


Figure 8: Time series line chart of Tertiary Pupil-Teacher Ratio and Female Employment-to-Population Ratio, controlling for Income Group.

A. The chart shows the relationship between the Tertiary Pupil-Teacher Ratio and the Female Employment-to-Population Ratio over time, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between the tertiary pupil-teacher ratio and female employment-to-population ratio over time across different income groups.
C. Implication: Other factors may have a more significant impact on female employment-to-population ratio than the tertiary pupil-teacher ratio.

Figure9. Female Academic Staff in Tertiary Education vs. Fertility Rate by Income Group

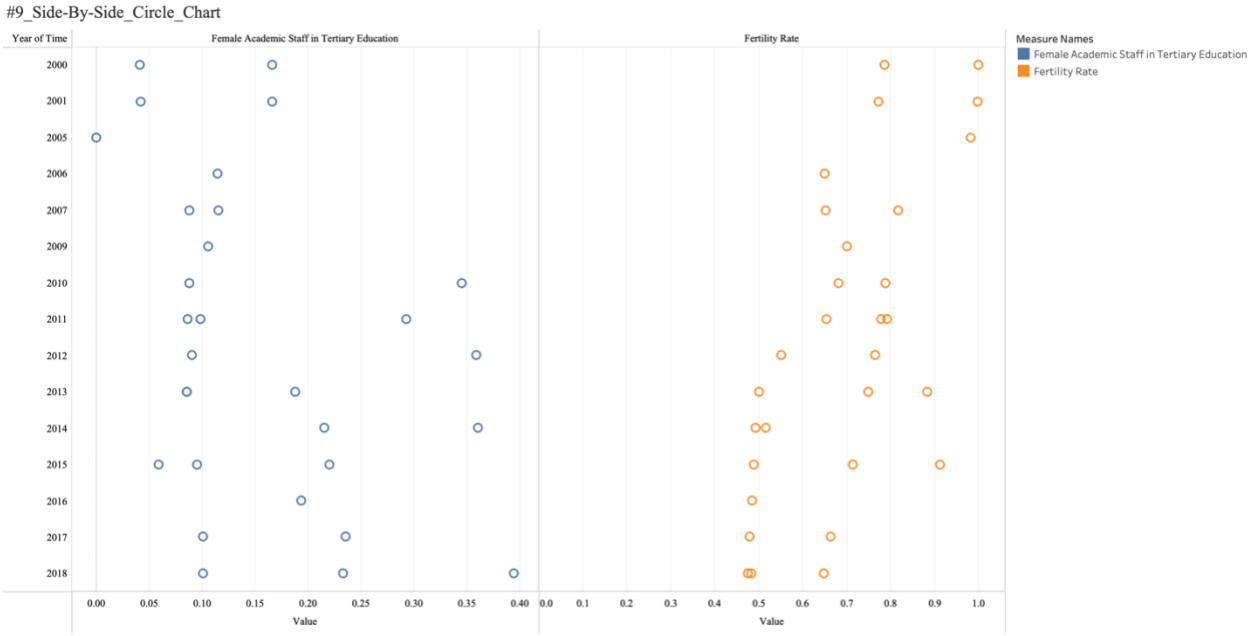


Figure 9: Time series circle chart of Female Academic Staff in Tertiary Education and Fertility Rate, controlling for Income Group.

A. The chart shows the relationship between Female Academic Staff in Tertiary Education and Fertility Rate over time, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between female academic staff in tertiary education and fertility rate over time across different income groups.
C. Implication: Other factors may have a more significant impact on fertility rates than the proportion of female academic staff in tertiary education.

Figure10. Compulsory Education Duration vs. Fertility Rate by Income Group

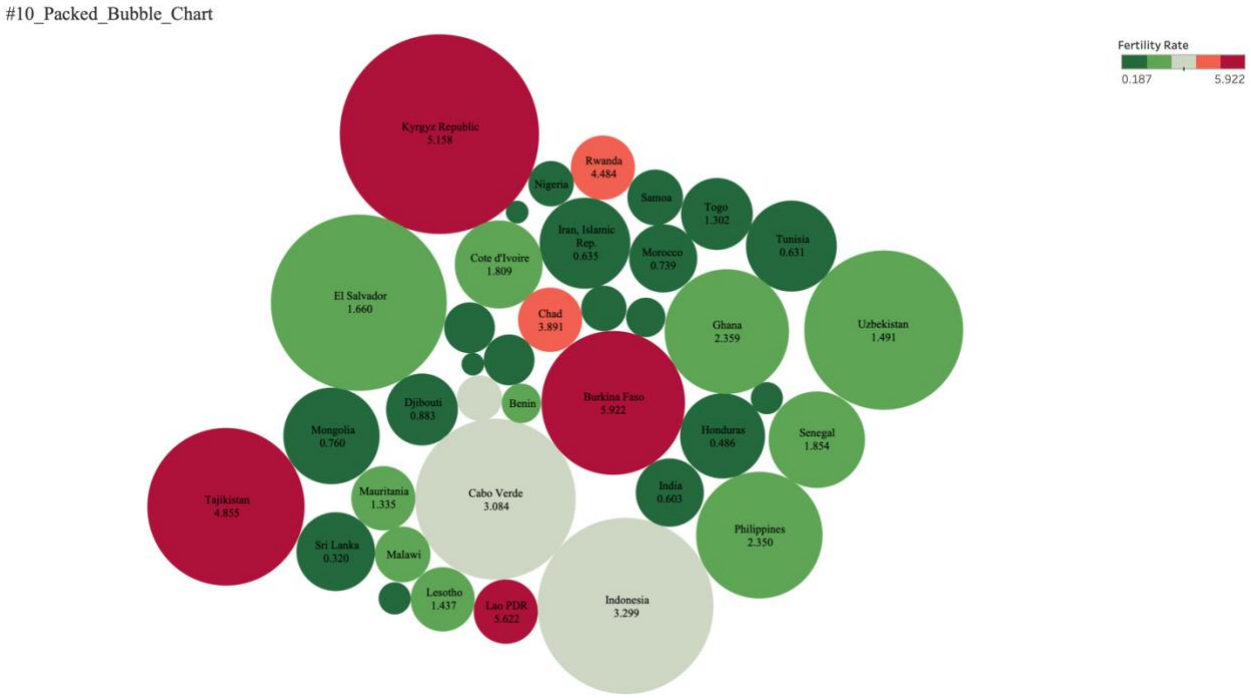


Figure 10: Bubble chart of Compulsory Education Duration and Fertility Rate, controlling for Income Group.

A. The chart shows the relationship between Compulsory Education Duration and Fertility Rate, with Income Group as a control variable.
B. Insight: Countries with longer compulsory education duration tend to have lower fertility rates.
C. Implication: Enhancing compulsory education duration may contribute to lower fertility rates, potentially resulting from increased educational and career opportunities for women.

Figure11. Government Expenditure on Education vs. Fertility Rate by Income Group

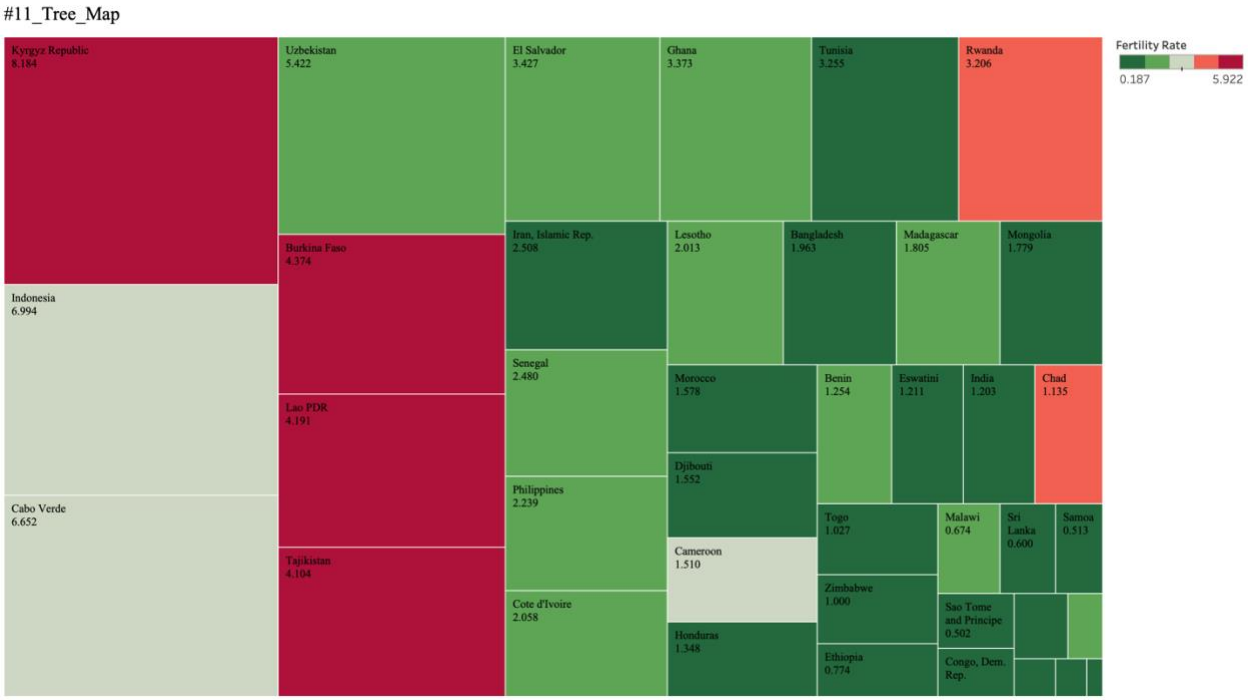


Figure 11: Tree Map of Government Expenditure on Education and Fertility Rate, controlling for Income Group.

A. The chart shows the relationship between Government Expenditure on Education and Fertility Rate, with Income Group as a control variable.
B. Insight: There is no clear pattern or relationship between government expenditure on education and fertility rate across different income groups.
C. Implication: Other factors may have a more significant impact on fertility rates than government expenditure on education alone.

Figure12. Tertiary School Enrollment vs. Female Mortality Rate by Income Group

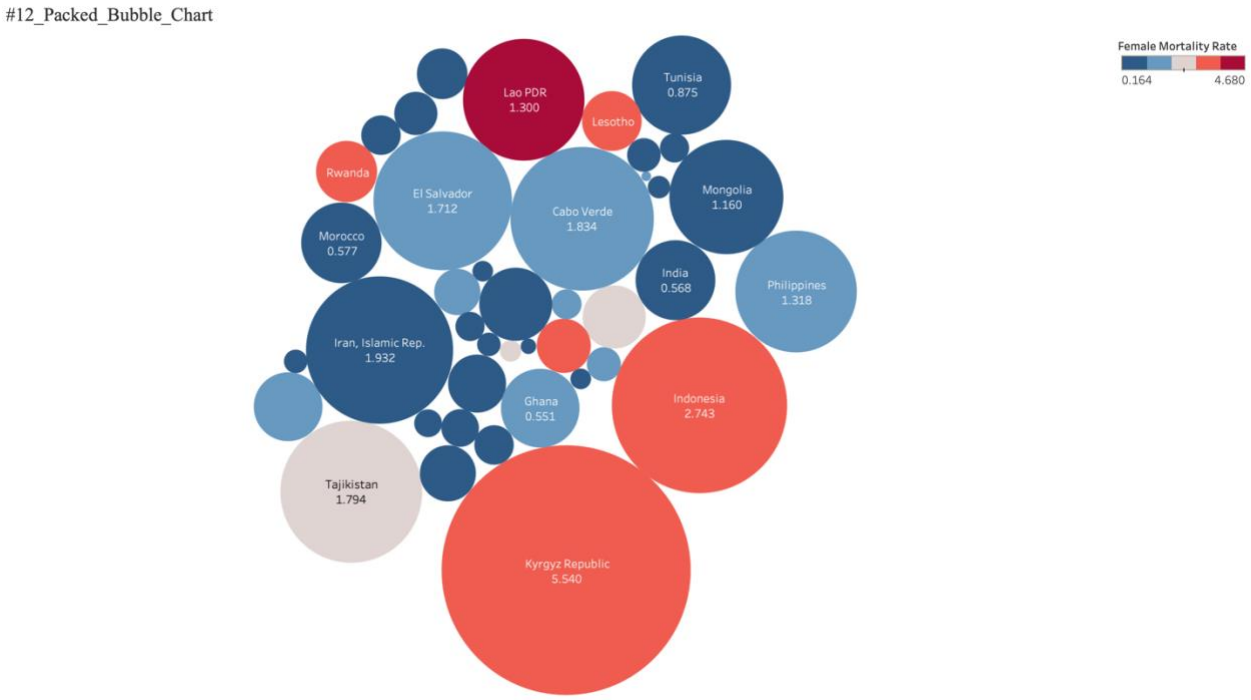


Figure 12: Bubble chart of Tertiary School Enrollment and Female Mortality Rate, controlling for Income Group.

A. The chart shows the relationship between Tertiary School Enrollment and Female Mortality Rate, with Income Group as a control variable.
B. Insight: Higher tertiary school enrollment is generally associated with lower female mortality rates.
C. Implication: Increasing tertiary school enrollment may contribute to better health outcomes and lower mortality rates for women.

Figure13. Female Academic Staff in Tertiary Education vs. Female Mortality Rate by Income Group

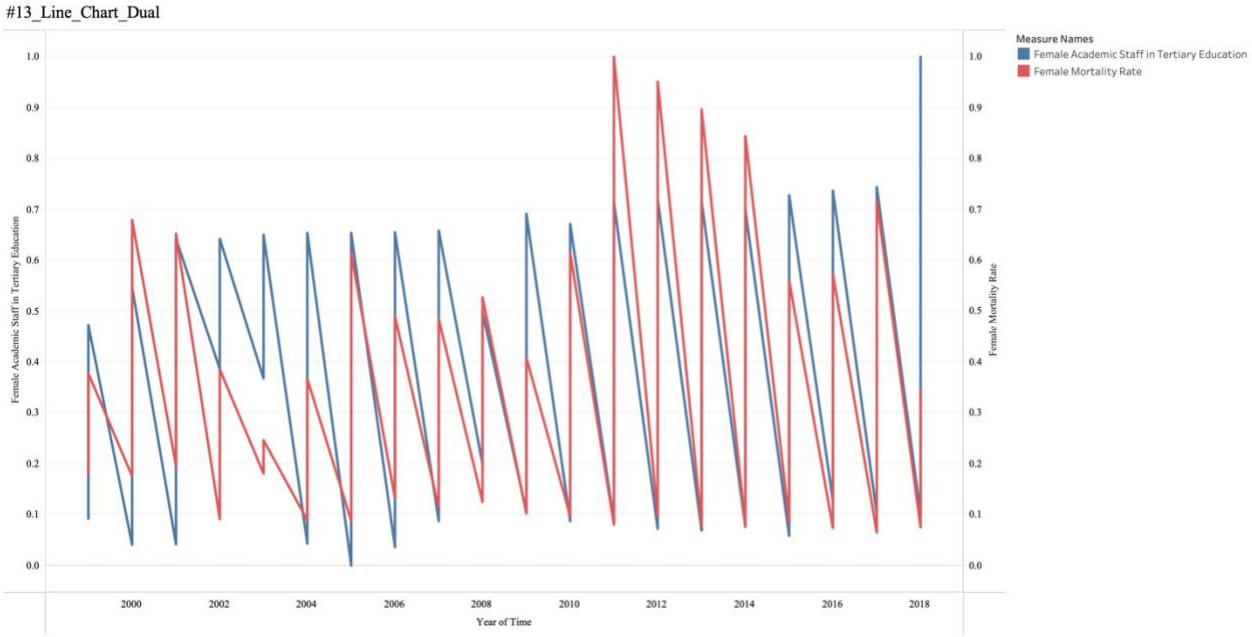


Figure 13: Time series dual line chart of Female Academic Staff in Tertiary Education and Female Mortality Rate, controlling for Income Group.

A. The chart shows the relationship between Female Academic Staff in Tertiary Education and Female Mortality Rate over time, with Income Group as a control variable.
B. Insight: No clear pattern or relationship is observed between female academic staff in tertiary education and female mortality rate over time across different income groups.
C. Implication: Other factors may have a more significant impact on female mortality rates than the proportion of female academic staff in tertiary education.

Figure14. Tertiary Pupil-Teacher Ratio vs. Female Mortality Rate by Income Group

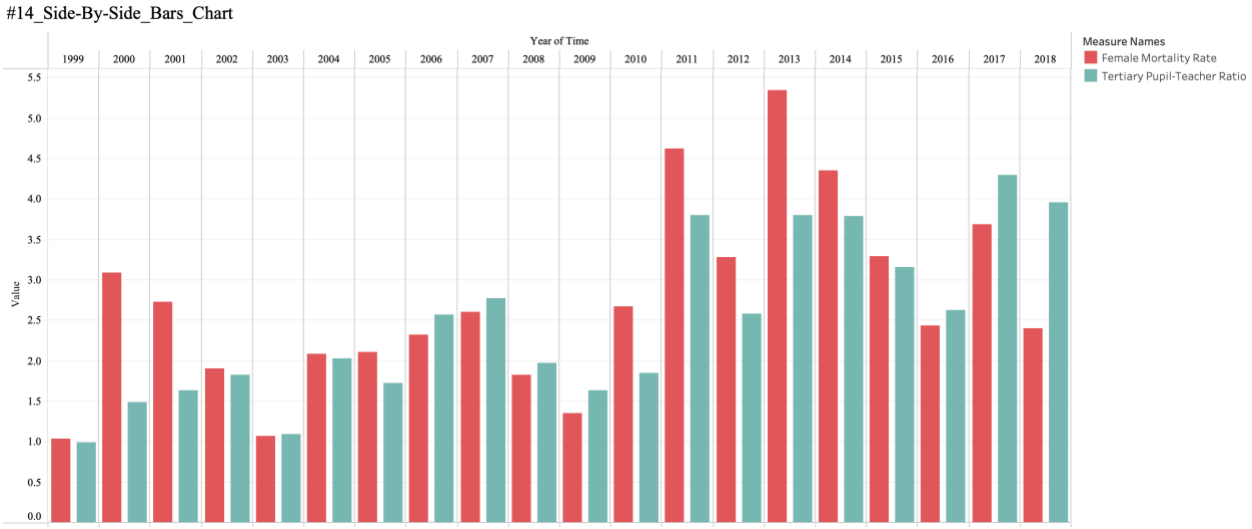


Figure 14: Side-by-side bar chart illustrating the relationship between Tertiary Pupil-Teacher Ratio and Female Mortality Rate over time, controlling for Income Group.

A. The chart shows the evolution of Tertiary Pupil-Teacher Ratio and Female Mortality Rate over time, with different colors representing different Income Groups.
B. Insight: There is a slight positive relationship between Tertiary Pupil-Teacher Ratio and Female Mortality Rate over time. As the Tertiary Pupil-Teacher Ratio increases, the Female Mortality Rate also tends to increase slightly.
C. Implication: A higher Tertiary Pupil-Teacher Ratio might be associated with a slightly higher Female Mortality Rate. Policymakers should consider the potential impact of educational resource allocation on female health outcomes when designing education policies.

Figure15. Tertiary School Enrollment vs. Female Life Expectancy at Birth by Income Group

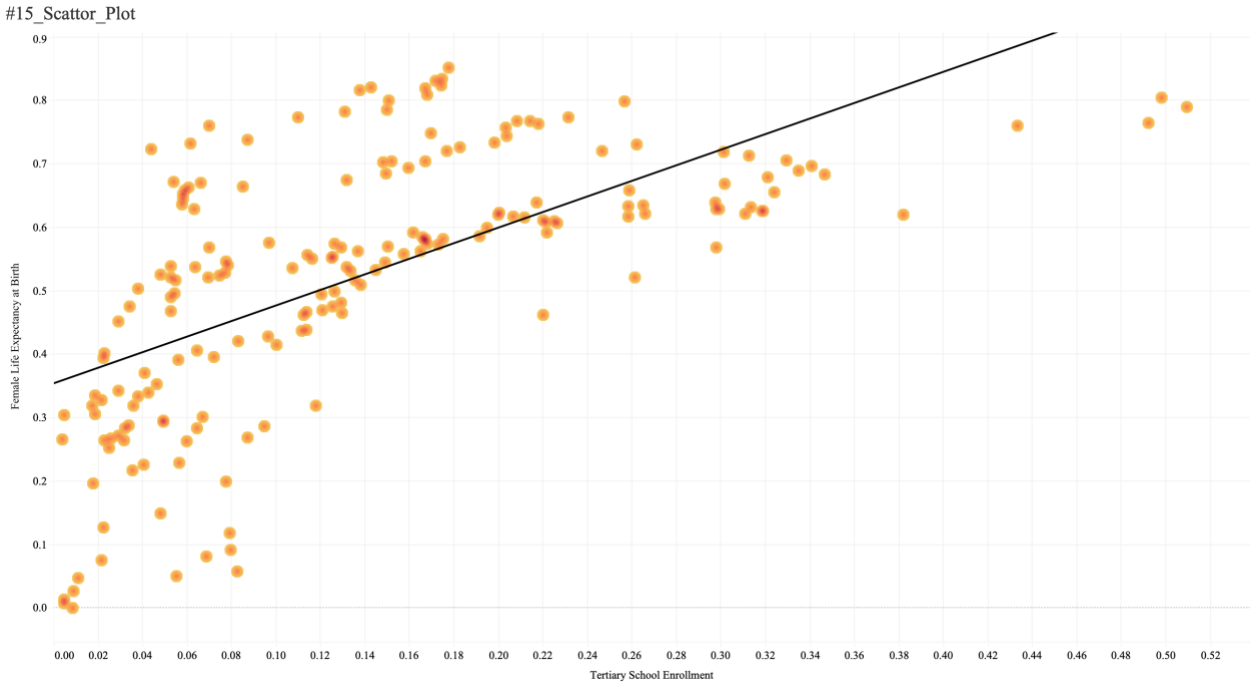


Figure 15: Scatter plot of Tertiary School Enrollment and Female Life Expectancy at Birth, controlling for Income Group.

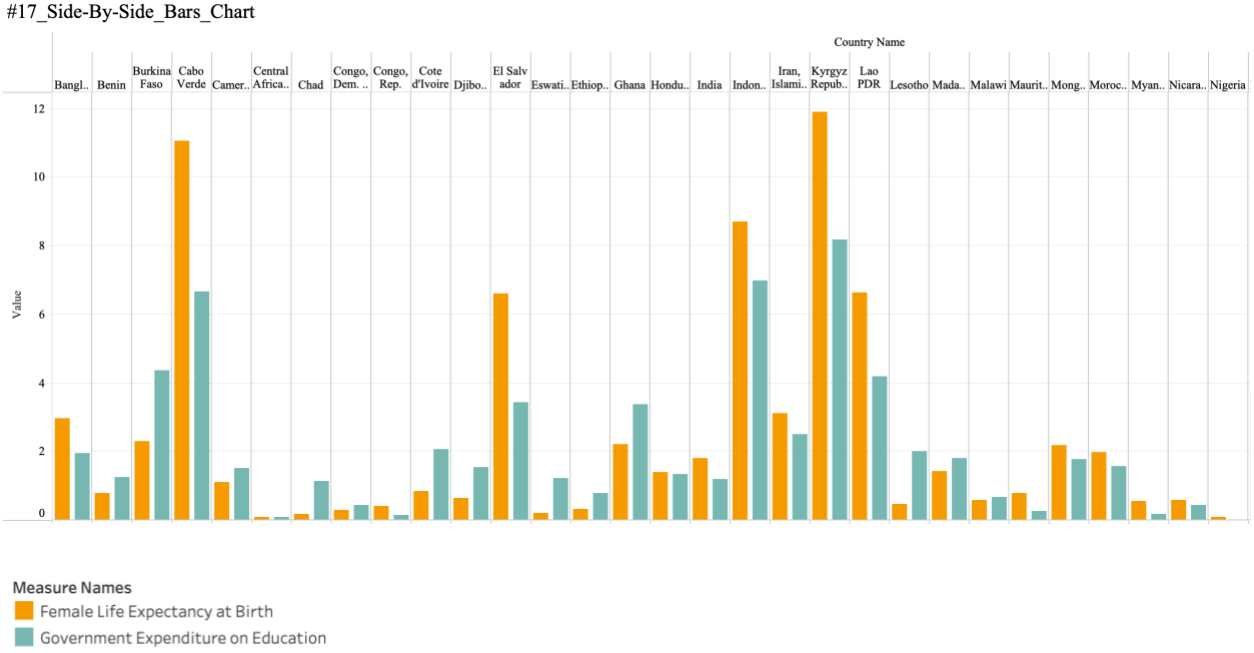
A. The chart shows the relationship between Tertiary School Enrollment and Female Life Expectancy at Birth, with Income Group as a control variable.
B. Insight: A positive correlation is observed between tertiary school enrollment and female life expectancy at birth.
C. Implication: Increasing tertiary school enrollment may contribute to improved health outcomes and higher life expectancy for women.

Figure16. Compulsory Education Duration vs. Female Life Expectancy at Birth by Income Group

Figure 16: Bar chart combined with line chart illustrating the relationship between Compulsory Education Duration and Female Life Expectancy at Birth over time, controlling for Income Group.

A. The chart shows the evolution of Compulsory Education Duration (bars) and Female Life Expectancy at Birth (line) over time, controlling for Income Groups.
B. Insight: There is a significant relationship between Compulsory Education Duration and Female Life Expectancy at Birth over time. As the duration of compulsory education increases, the female life expectancy at birth also tends to rise.
C. Implication: Ensuring longer compulsory education might be associated with improved female life expectancy at birth. Policymakers should consider extending the duration of compulsory education to enhance the quality of life and well-being of their female population.

Figure17. Government Expenditure on Education vs. Female Life Expectancy at Birth by Income Group



Caption: Figure 17: Side-by-side bar chart illustrating the relationship between Government Expenditure on Education and Female Life Expectancy at Birth by country, controlling for Income Group.

A. The chart shows a side-by-side comparison of Government Expenditure on Education and Female Life Expectancy at Birth by country, with different colors representing different Income Groups.
B. Insight: There is a significant relationship between Government Expenditure on Education and Female Life Expectancy at Birth by country. Countries with higher government expenditure on education tend to have higher female life expectancies at birth.
C. Implication: Investing more in education might be associated with improved female life expectancy at birth. Governments should consider increasing their investment in education to enhance the quality of life and well-being of their female population.

Figure18. Tertiary School Enrollment vs. Female Wage and Salaried Workers by Income Group

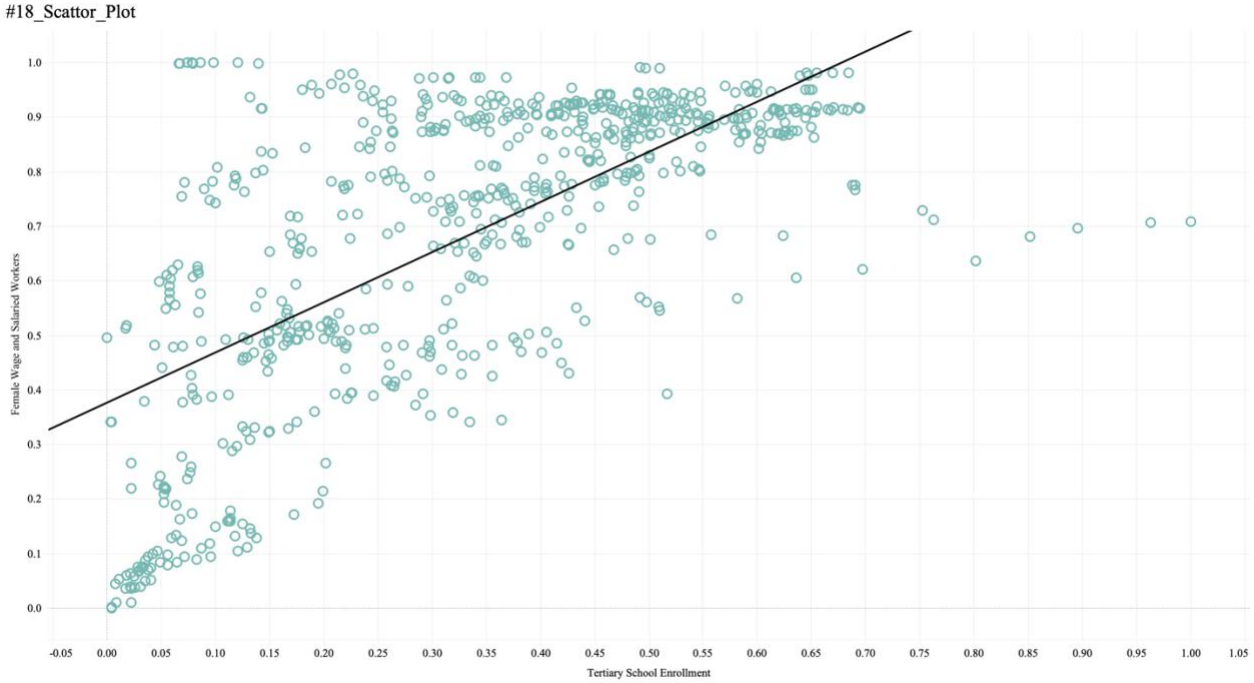


Figure 18: Scatter plot of Tertiary School Enrollment and Female Wage and Salaried Workers, controlling for Income Group, with regression trend line.

A. The chart shows the relationship between Tertiary School Enrollment and Female Wage and Salaried Workers, with Income Group as a control variable.
B. Insight: There is a positive relationship between tertiary school enrollment and female wage and salaried workers, with a high R-squared value of 0.449763.
C. Implication: Increased tertiary school enrollment may lead to a higher percentage of female wage and salaried workers, indicating the importance of higher education in promoting female participation in the workforce.

Figure19. Female Academic Staff in Tertiary Education and Female Wage and Salaried Workers Over Time

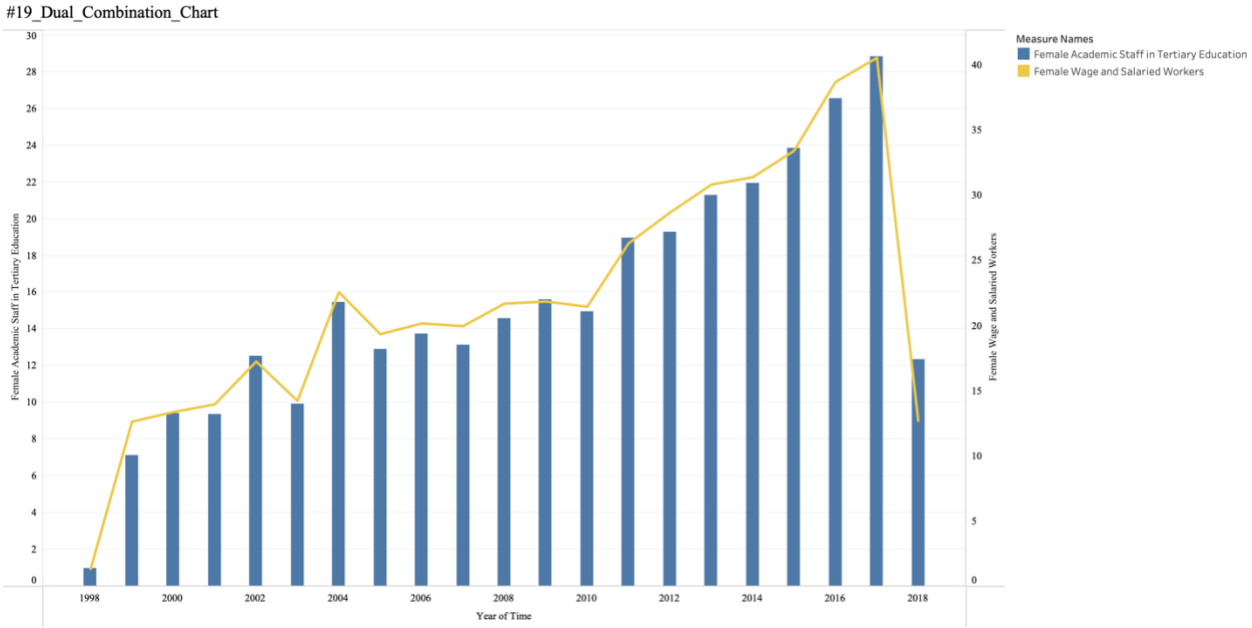


Figure 19: Bar chart combined with line chart illustrating the relationship between Female Academic Staff in Tertiary Education and Female Wage and Salaried Workers by Year.

A. The chart shows the relationship between Female Academic Staff in Tertiary Education (bar chart) and Female Wage and Salaried Workers (line chart) over time.
B. Insight: There is a noticeable increase in both Female Academic Staff in Tertiary Education and Female Wage and Salaried Workers over time, indicating a positive correlation between these two variables.
C. Implication: As the number of female academic staff in tertiary education increases, it might lead to a higher number of female wage and salaried workers, potentially improving gender equality in the workforce. Efforts to support and promote women in tertiary education could contribute to higher female labor force participation.

Figure20. Tertiary Pupil-Teacher Ratio vs. Female Wage and Salaried Workers by Income Group

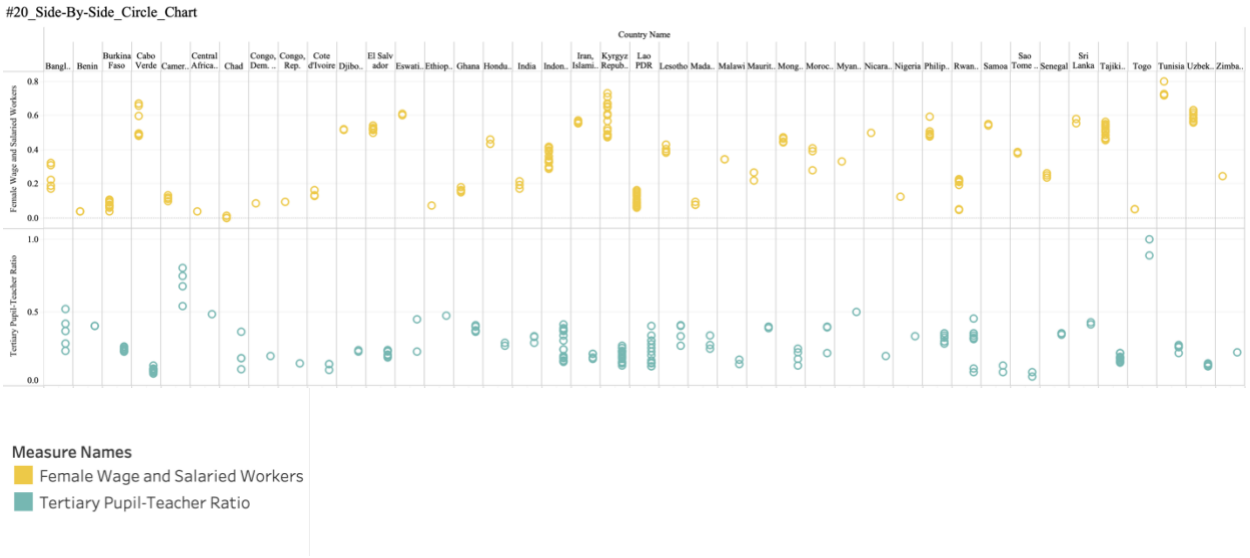


Figure 20: Scatter plot of Tertiary Pupil-Teacher Ratio and Female Wage and Salaried Workers by Country, controlling for Income Group.

A. The chart shows the relationship between the Tertiary Pupil-Teacher Ratio and Female Wage and Salaried Workers for each country, with Income Group as a control variable.
B. Insight: No clear pattern or relationship is observed between the tertiary pupil-teacher ratio and female wage and salaried workers across different income groups.
C. Implication: The tertiary pupil-teacher ratio may not have a significant impact on female wage and salaried workers. Other factors may be more influential in affecting female participation in the workforce.

Statistical Model Analysis

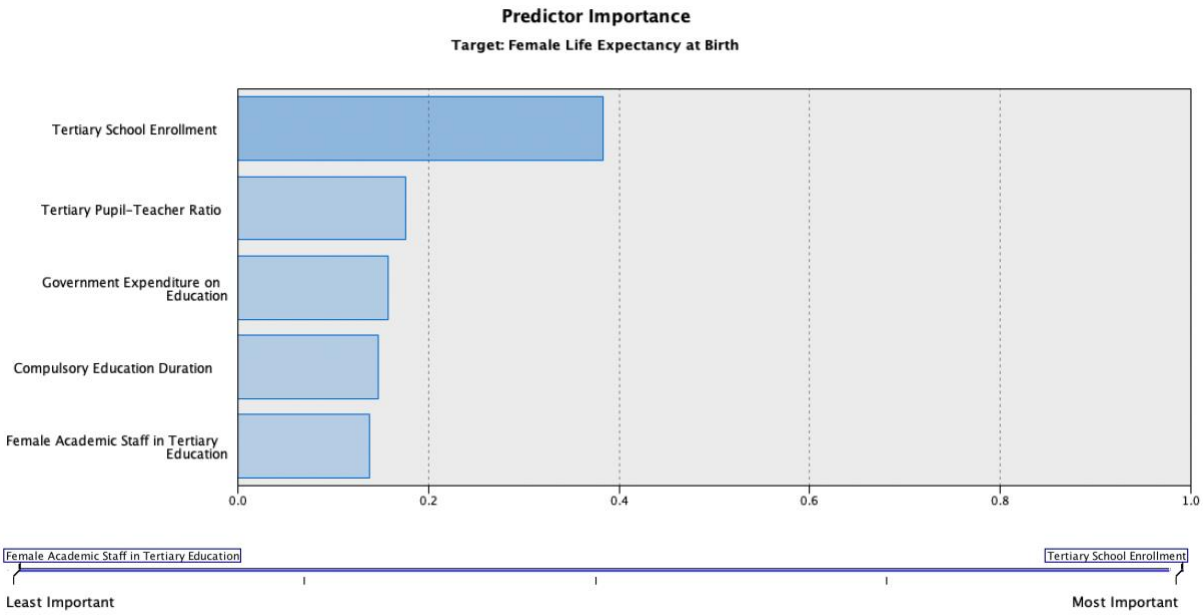


Figure 21: Predictor importance of regression model toward Female life expectancy at birth

Hypothesis: The 5 independent variables may have strong association with female life expectancy at birth.
Descriptive Statistics: ANOVA table: Regression Sum of Squares=10.485, df=5, Regression Mean Square=2.097, F value=155.407, Significance<0.001

A. The chart shows predictor importance of regression model
B. Insight: Tertiary school enrollment is the most significant variable to Female life expectancy at birth with predictor importance=0.38
C. Implication: Female academic staff in tertiary education may have little influence on female life expectancy at birth.

Machine Learning Model Analysis

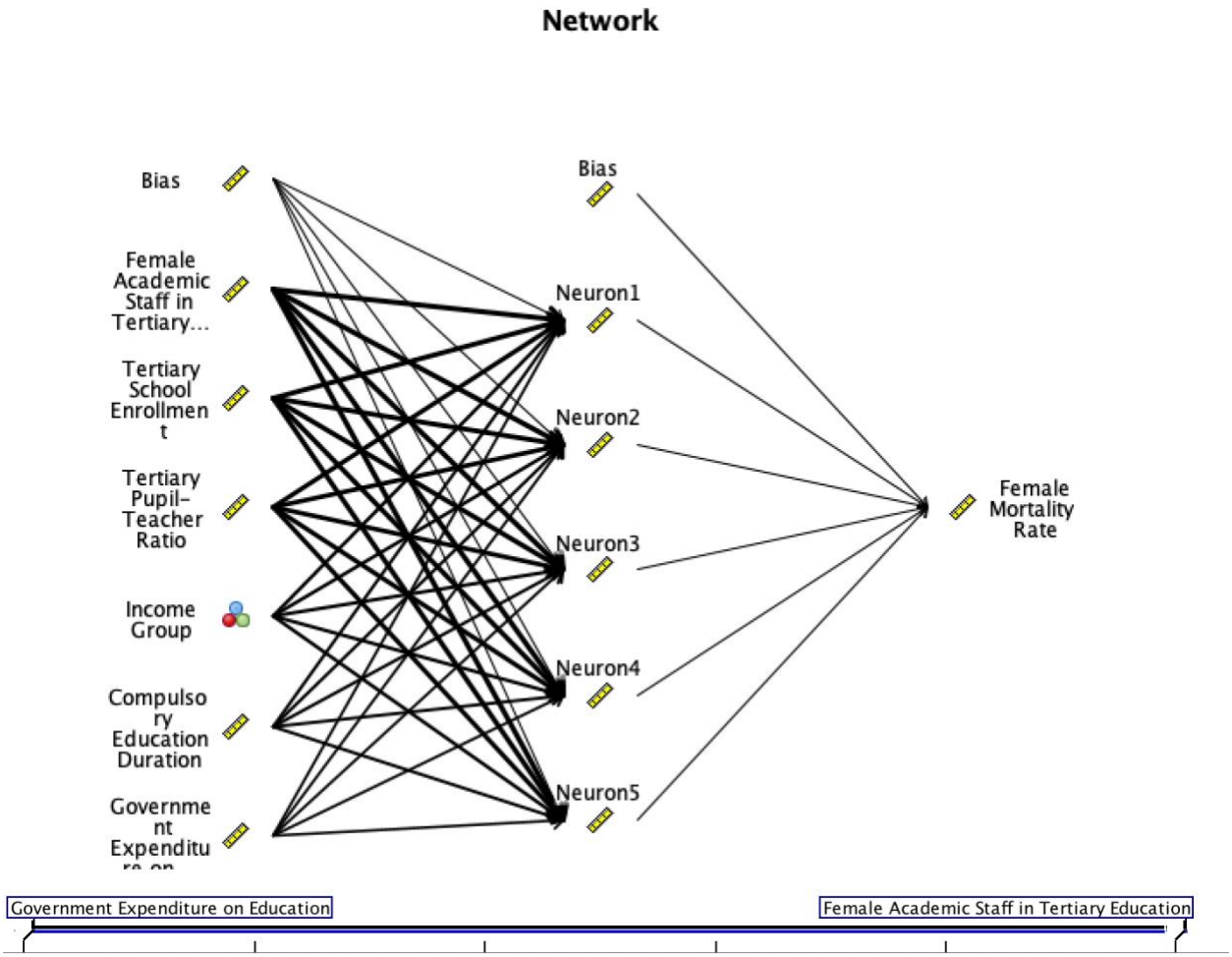


Figure 22: Structure of Neural Network model

Hypothesis: The 5 independent variables have strong association with female wage and salaried workers.

A. This chart shows structure of Neural Network model

B. Insight: Female academic staff in tertiary education is the most significant variable to Female mortality rate.

C. Implication: Government expenditure on education may have little influence on female mortality rate.