Canada's Wage Disparity:
Is the Gender Gap Worsening?
By XXXXXXXXXXX

   Disparity in wages between men and women has been an issue for a long time now. Despite of so many studies, reviews, and researches carried out in advanced countries, the gap between wages among genders seems to continue. Even with the legislation of minimum wage law and salary standardization in various governments around the world, there is still a clear disparity in wages by sex. In last year's Organization of Economic Co-operation and Development (OECD) statistics (http://www.torontosun.com/money/2010/03/08/13155136.html) as published in Toronto Sun, "Canadian men on average get paid more than 20% more than their female colleagues, giving the country one of the highest gender gaps among the 30 OECD nations". However, the men in the parliament are claiming that an improvement has been finally achieved. Has there been a real improvement worth celebrating for? The following data were obtained from "Statistics Canada, CANSIM, table (for fee) 202-0102. Last modified: 2011-06-15" (http://www40.statcan.gc.ca/l01/cst01/labor01b-eng.htm).

Full Time, Full Employed Average Wages in Canada

Year	Men's Average Wage (in Dollars constant 2009)	Women's Average Wage (in Dollars constant 2009)	Earnings Ratio %
2000	57,000	40,300	70.7%
2001	58,200	40,700	69.9%
2002	58,300	40,900	70.2%
2003	58,100	40,800	70.2%
2004	60,000	42,100	70.2%
2005	59,500	41,900	70.4%
2006	60,200	43,300	71.9%
2007	61,800	44,200	71.5%

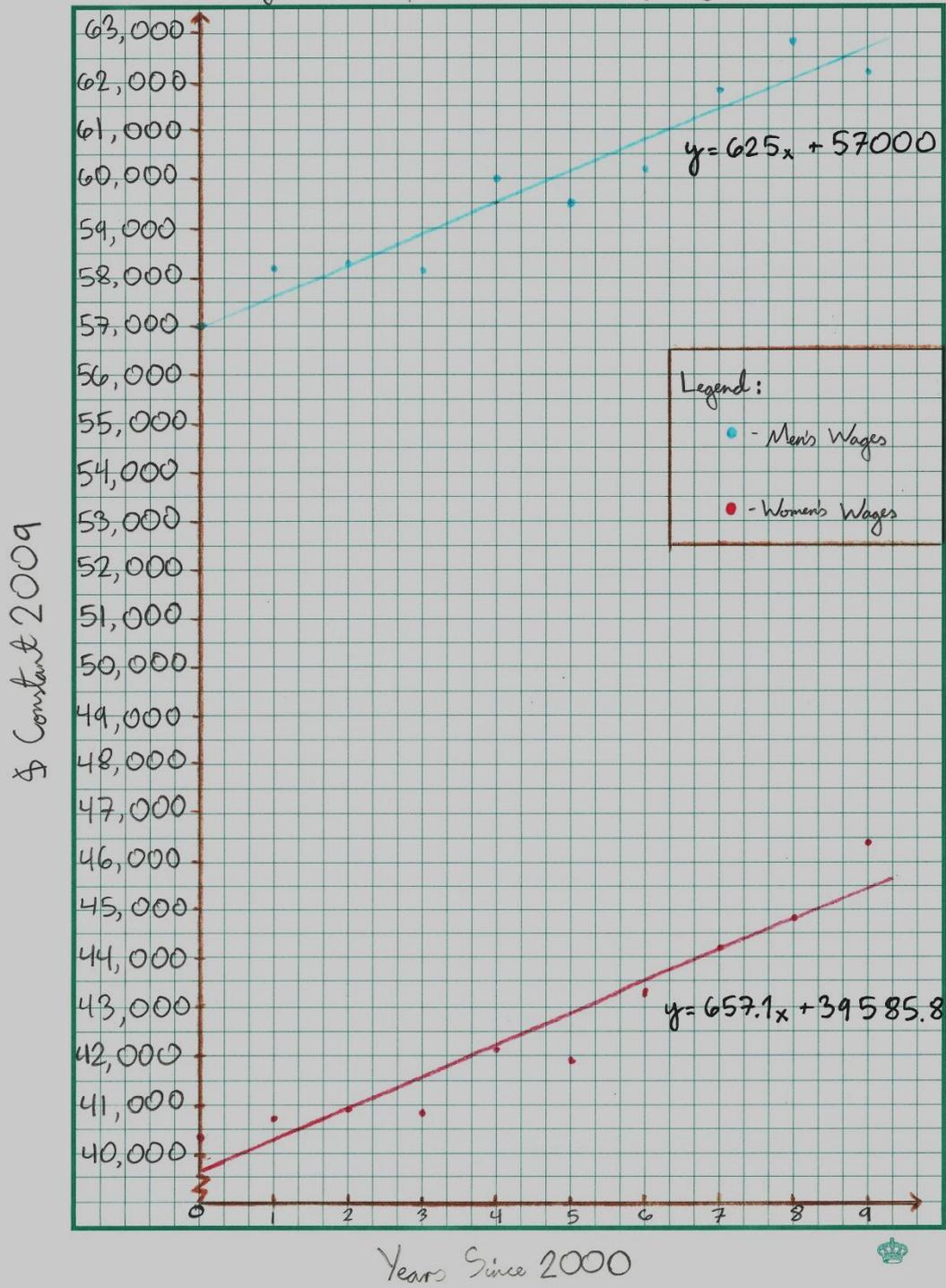| Year	Men's Average Wage (in Dollars constant 2009)	Women's Average Wage (in Dollars constant 2009)	Earnings Ratio %
2008	62,800	44,800	71.3%
2009	62,200	46,400	74.6%

Note: Data before 1996 are drawn from Survey of Consumer Finances (SCF) and data since 1996 are taken from the Survey of Labour and Income Dynamics (SLID).

In year 2000 Earnings Ratio or pay disparity ratio (ratio of women's earning divided by men's earning) is equal to 70.7%. This ratio remains stable from year 2000 to 2008 at the range of 70% to 72% e.g. average pay of women is around 70% to 72% of the average pay of men. Hence, it was apparent that there was no improvement in the wage gap during the 9-year period. However, this ratio went up to 74.6% in year 2009. This means that the disparity between the wages of Canadian Men and Women became smaller since the ratio went up by as much as 3.3% (difference of 2009 ratio from 2008 ratio). Is this increase sufficient for the Canadian politicians to claim that an improvement was achieved? Is the future so close now that we can expect the next generation of Canadian men and women enjoying the same annual wage?

Figures from the Statistics Canada were not always positive. In years 2003 and 2005, the average wage for both men and women went down. The average wage for men, based on constant $ in 2009, went down by $200 in year 2003 and $500 in year 2005. The average wage for women on similar period went down by $100 and $200, respectively. Even with these reductions, the earnings ratio only had very little change.

In order to further demonstrate the wide gap in wages between men and women, the graph in the following page shows a snapshot of the years 2000 to 2009 average wage figures in both sexes. To simplify the various points drawn in the graph, a line of best fit was made. This line is simply a straight line that best represents the data on a scatter plot. The lines of best fit for the annual wage earned by men and women passed through some of the points in the scatter plot.

Average Full Year, Full Time Earnings By Sex - Canada

$y = 625x + 57000$

$y = 657.1x + 39585.8$

Legend:
- 🔵 - Men's Wages
- 🔴 - Women's Wages

Y-axis: $ Constant 2009

X-axis: Years Since 2000

The graph from the previous page shows that in year 2000, Canadian men earned an average annual salary of $57,000 as compared to Canadian women's earning of $40,300. Ten years later, Canadian men earned an average annual salary of $62,200 while Canadian women earned an average annual salary of $46,400.

In interpreting the line of best fit drawn from the set of data plotted in the graph, Canadian men showed a line of $Y = 625X + 57,000$. This equation means that for every year, represented by "X", the average annual wage of men increases by $625. The starting salary of $57,000, which is the average annual salary when records of annual salaries were recorded in year 2000, is called the Y-intercept.

For the Canadian women the line of best fit is represented by $Y = 657.1X + 39,585.8$. This means that for every year, represented by "X", the average annual wage of women increases by $657.1. The starting salary of $39,585.8 is the Y-intercept. This is the equivalent value of the line of best fit when records of annual salaries were recorded in year 2000.

Although the starting salaries (y-intercept) for both sexes has a gap of $17,414.2 (difference between $57,000 and $39,585.8), the annual increase (slope) of Canadian women is higher than Canadian men by $32.1 (difference between $657.1 and $625). Is this advantage sufficient for the women to equal or take over the men in the annual wage race?

Using simple algebraic substitution, the equation of $Y = 625X + 57,000$ (men annual wage) and the equation of $Y = 657.1X + 39,585.8$ (women annual wage) were used.

$$657.1X + 39,585.8 = 625X + 57,000$$

By re-arranging the values of X in one side and the whole numbers to the other side:

$$657.1X - 625X = 57,000 - 39,585.80$$

$$32.1X = 17,414.2$$

By dividing both sides of the equation by 32.1 (to get the value of X)

$$X = 542.5 \text{ years (no. of years since year 2000)}$$

The above substitution shows that the common value of X between the two equations is equal to 542.5. This means that it will take another 542.5 years (from year 2000) before Canadian women will have an equal annual wage with Canadian men.

In order to validate if the values presented by simple algebraic substitution is correct, the same equations were used but this time the process of elimination was applied.

$$Y = 657.1X + 39{,}585.8$$

$$- \quad \text{(Minus)} \ Y = 625.0X + 57{,}000.0$$

$$0 \ = 32.1X \ - 17{,}414.2$$

$$-32.1X \ = - 17{,}414.2$$

Divide both sides by -32.1:

$$X \ = 542.5 \text{ years (number of years since year 2000)}$$

Since the number of years it will take for Canadian women to equal the annual wage of Canadian men has been validated using two different methods, is there still a good reason to celebrate the 3.3% increase in the Earnings ratio as reported by Statistics Canada in year 2009?

This report should reject any claims from the Canadian Government that they have finally addressed the difficult problem of closing the annual wage gap between men and women. If a genuine solution has be implemented or adopted, this report could serve as basis in determining if the solutions put in place are working and effective. Private firms and companies who want to help the government in making the gap smaller may use this report in reviewing the wages being paid to their male and female employees.