

8.6 Making More \$

A Solidify Understanding Task

Each year the U.S. Census Bureau provides income statistics for the United States. In the years from 1990 to 2005, they provided the data in the tables below. (All dollar amounts have been adjusted for the rate of inflation so that they are comparable from year-to-year.)

Year	Median Income for All Men
2005	41196
2004	41464
2003	40987
2002	40595
2001	41280
2000	41996
1999	42580
1998	42240
1997	40406
1996	38894
1995	38607
1994	38215
1993	37712
1992	37528
1991	38145

Year	Median Income for All Women
2005	23970
2004	23989
2003	24065
2002	23710
2001	23564
2000	23551
1999	22977
1998	22403
1997	21759
1996	20957
1995	20253
1994	19158
1993	18751
1992	18725
1991	18649

1. Create a scatter plot of the data for men. What is your estimate of the correlation coefficient for these data?
What is the actual correlation coefficient?
What does it tell you about the relationship between income and years for men?
2. On a separate graph, create a scatter plot of the data for women. What is your estimate of the correlation coefficient for these data?
What is the actual correlation coefficient?
What does it tell you about the relationship between income and years for women?

How does that compare to the data for men?

3. Estimate and draw a line of best fit for each set of data.
 - a. Describe how you estimated the line for men. If you chose to run the line directly through any particular points, describe why you selected them.
 - b. Describe how you estimated the line for women. If you chose to run the line directly through any particular points, describe why you selected them.
4. Write the equation for each of the two lines in slope intercept form.
 - a. Equation for men:

 - b. Equation for women:
5. Use technology to calculate a linear regression for each set of data. Add the regression lines to your scatter plots.
 - a. Linear regression equation for men:

 - b. Linear regression equation for women:
6. Compare your estimated line of best fit to the regression line for men. What does the slope mean in each case? (Include units in your answer.)

7. Compare your estimated line of best fit to the regression line for women. What does the y-intercept mean in each case? (Include units in your answer.)

8. Compare the regression lines for men and women. What do the lines tell us about the income of men vs women in the years from 1991-2005?

9. What do you estimate will be the median income for men and women in 2015?

10. The Census Bureau provided the following statistics for the years from 2006-2011.

Year	Median Income for All Men
2011	37653
2010	38014
2009	38588
2008	39134
2007	41033
2006	41103

Year	Median Income for All Women
2011	23395
2010	23657
2009	24284
2008	23967
2007	25005
2006	24429

With the addition of these data, what would you now estimate the median income of men in 2015 to be? Why?

11. How appropriate is a linear model for men's and women's income from 1991-2011? Justify your answer.