

Problem Set #2 – Answer Sketch

1. Back in the early 1990s, a report circulated noting that male high school teachers were paid more than female high school teachers. Assuming this is true, what information would you require before judging this fact to be evidence of wage discrimination? In your answer, define wage discrimination and explain how the required information relates to this definition.

Wage discrimination in the labor market exists when workers with the same productive characteristics are systematically paid differently because of the demographic group to which they belong. The critical issue in this question is whether male and female high school teachers have the same productive characteristics. The first area to obtain information is the human capital characteristics, such as level of education (degree level, major, experience). Is the male wage advantage due to the field in which men teach (such as math, science). If there is a shortage of teachers in fields such as math and science where the outside opportunities pay well, then the wage gap may be due to field. If male teachers have more teaching experience, that may explain part of the gap. A secondary area of information is working conditions. In the past, male teachers may have worked longer hours due to extra duties as sports coaches or club sponsors. Lastly, perhaps male teachers work in different geographical areas, where a longer commute or more dangerous surroundings may be associated with compensating wage differentials.

2. Suppose that unionized workers in the retail sales industry earn \$10 per hour and that nonunionized workers in the industry earn \$8 per hour. What can be said about the relative wage advantage of unionized workers and the absolute effect of the union on its members' real wage?

The most straightforward way to measure the union relative wage advantage is to calculate:

$$\text{Relative wage advantage} = [(\text{union wage} - \text{nonunion wage})/\text{nonunion wage}] = [(10-8)/8]*100 = 25\%.$$

In this case, union workers earn 25% more than nonunion workers. The absolute effect cannot be determined because we do not know what the union wage would be in the absence of unions. We cannot take the nonunion wage as this answer, because the presence of unions might increase the nonunion wage, due to the threat effect. There may be additional spillover effects too, such as a reduced supply of workers to nonunion stores, causing the nonunion wage to rise.

3. Suppose the wage distribution for a small town is given below:

<u>Sector</u>	<u>Number of workers</u>	<u>Wage</u>
A	50	\$10/hour
B	25	\$5/hour
C	25	\$5/hour

Then a minimum wage law is passed that doesn't affect the market in high-wage sector A, but boosts wages to \$7/hour in covered sector B, while reducing employment in that sector to 20. Workers displaced from sector B move into sector C, where wages fall to \$4.50/hour as employment increases to

30. Has wage inequality increased or decreased? Explain.

Here's the new table, incorporating information after the increase in the minimum wage:

<u>Sector</u>	<u>Number of workers (1)</u>	<u>Wage(1)</u>	<u>Number of workers(2)</u>	<u>Wage(2)</u>
A	50	\$10/hour	50	\$10/hour
B	25	\$5/hour	20	\$7/hour
C	25	\$5/hour	30	\$4.50/hour

Calculate mean and standard deviation for the first situation:

$$X \text{ bar} = .5(10) + .25(5) + .25(5) = \mathbf{\$7.50}$$

$$\text{Standard deviation} = \text{Sum of } (X-X\text{bar})^2/N-1 = [50*(10-7.5)^2] + [25*(5-7.5)^2] + [25*(5-7.5)^2]/99 =$$

$$(50*6.25) + (25*6.25) + (25*6.25)/99 = (312.5+156.25+156.25)/99 = 625/99 = 6.31$$

So, in the first case, the mean is \$7.50/hour and the standard deviation is \$6.31.
The range is \$5 (10-5).

In the second situation,

$$X \text{ bar} = .5(10) + .20(7) + .30(4.5) = 5 + 1.4 + 1.35 = \mathbf{\$7.75}$$

$$\text{Standard deviation} = \text{Sum of } (X-X\text{bar})^2/N-1 = [50*(10-7.75)^2] + [20*(7-7.75)^2] + [30*(4.5-7.75)^2]/99 =$$

$$(50*5.0625) + (20*0.5625) + (30*10.5625)/99 = (253.125+11.25+316.875)/99 = 581.25/99 = \mathbf{5.87}$$

So, in the first case, the mean is \$7.50/hour and the standard deviation is \$6.31.
The range is \$5.50 (10-4.5)

Notice that the spread (range) increased with the rise in the minimum wage, yet the standard deviation fell. The difference between highest and lowest wage increased, but more workers earned wages clustered around the mean. That produced a fall in the standard deviation. I would conclude that the minimum wage reduced wage inequality, based on the notion that more workers earned pay similar to the average.

4. In 1955, union density in the U.S. was approximately 35%, nearly all of which was comprised of private sector workers. Since then, union density has fallen to about 12%, a decline of nearly 23 percentage points. Provide explanations (at least five) for the decline of private sector union density in the U.S.
 1. Decline in manufacturing employment (the sector where union organizing drives have been most successful)
 2. Shift in population (and employment) to southern and western states (less favorable environments for union organizing, due to right to work laws).

3. *Worsening performance of unions in certification and decertification elections, due in part to increase in aggressive anti-union tactics by management (change in environment with 1981 PATCO strike).*
4. *More firm resistance due to more competitive environment with rise in international competition, deregulation (trucking, airlines, railroads).*
5. *Development of “positive labor relations” on the part of firms has reduced worker desire and need for union protection. This is limited to large firms.*

The decline in union density in the private sector has been “virtually ubiquitous, encompassing workers in all industries, regions, and occupations (R.B. Freeman, Journal of Economic Perspectives, Spring 1988, pg. 65). This cast doubt on reasons 1 and 2. Reason #5 is limited. Reasons 3 and 4 are most likely, according to trade union experts.