**Lab Write-up #1**

**Introduction**

Average hourly earnings (AHE) from 1992 and 2012 are compared to find changes for high school graduates, college graduates, men, and women.

**Data and Methods**

The data comes from The U.S. Census Bureau and the U.S. Bureau of Labor Statistics’ (BLS) Current Population Survey (CPS). The CPS is a monthly survey of approximately 65,000 households in the United States. The sample is picked at random, although through a complicated process. The sampling process can be read about in the *Handbook of Labor Statistics*. Only observations from 1992 and 2012 are used. t-Tests were done using the Stata software to compute confidence intervals, means, standard deviations, and p-values.

Each observation represents data from a full-time worker, working more than 35 hours per week for at least 48 weeks a year. Table 1 lists the variables, units, and summary statistics. 7612 observations are used for 1992 and 7440 for 2012 totaling 15052.

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| Table 1. Variables and Summary Statistics | | | | |
| Variable | **Number (N)** | **Mean** | **Definition** | **Std. Dev.** |
| Year | 15052 | 2001.886 | The year the observation was made | 9.999679 |
| AHE (USD) | 15052 | 15.66179 | Average Hourly Earnings | 9.44204 |
| Bachelor | 15052 | .4595403 | 1 if the subject had a bachelor’s degree, 0 if not | .4983769 |
| Female | 15052 | .4252591 | 1 if the subject was female, 0 if male | .4943987 |

**Results**

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| Table 2. 95% Confidence Intervals For Nominal AHE in 1992 and 2012 | | | | | |
| **Group** | **N** | **Mean** | **Std. Dev.** | **[95% Conf.** | **Interval]** |
| 1992 | 7612 | 11.61683\*\*\*  (0.064409) | 5.61948 | 11.49057 | 11.74309 |
| 2012 | 7440 | 19.80026\*\*\*  (0.1238916) | 10.68632 | 19.5574 | 20.04312 |
| combined | 15052 | 15.66179\*\*\*  (0.0769607) | 9.44204 | 15.51094 | 15.81264 |
| diff |  | -8.183424\*\*\*  (0.1387325) |  | -8.455357 | -7.911491 |

Standard Errors are in parenthesis. \*\*\*p-value of less than 0.01.

Table 2 shows confidence intervals for AHE in 2012 and 1992. It appears that wages have increased in nominal terms, although nominal terms may be misleading. It is necessary to account for inflation. Table 3 adjusts for the CPI and expresses the result in 2012 Dollars.

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| Table 2. 95% Confidence Intervals For Real AHE between 1992 And 2012 in 2012 Dollars | | | | | |
| Group | **N** | **Mean** | **Std. Dev.** | **[95% Conf.** | **Interval]** |
| 1992 | 7612 | 19.01087\*\*\*  (0.1054049) | 9.19624 | 18.80425 | 19.21749 |
| 2012 | 7440 | 19.80026\*\*\*  (0.1238916) | 10.68632 | 19.5574 | 20.04312 |
| combined | 15052 | 19.40105\*\*\*  (0.0812489) | 9.968151 | 19.2418 | 19.56031 |
| diff |  | 0.7893878\*\*\*  (0.1626632) |  | 1.108228 | .4705474 |

Standard Errors are in parenthesis. \*\*\*p-value of less than 0.01.

The data suggests a small, statistically significant difference of AHE between 1992 and 2012, with a 95% confidence interval between 1.108228 and 0.4705474 for the difference. AHE has increased by an average of 0.7893. The results can be broken down further by education level, because of different trends for high school and college graduates.

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| Table 3. Confidence Interval For Change In Real Purchasing Power Of High School and College Graduates From 1992 – 2012 In 2012 Dollars. | | | | | | |
| Education | **Group** | **N** | **Mean** | **Std. Dev.** | **[95% Conf.** | **Interval]** |
| High School | 1992 | 4650 | 16.31645\*\*\*  (0.1105541) | 7.538785 | 16.09971 | 16.53319 |
| 2012 | 3485 | 15.68547\*\*\*  (0.1397007) | 8.247077 | 15.41157 | 15.95938 |
| combined | 8135 | 16.04614\*\*\*  (0.0870982) | 7.855756 | 15.87541 | 16.21688 |
| diff |  | .6309786\*\*\*  (9.1758823) |  | .2862043 | .975753 |
| College | 1992 | 2962 | 23.2408  (0.1826822) | 9.942341 | 22.8826 | 23.59899 |
| 2012 | 3955 | 23.42605  (0.1790882) | 11.26264 | 23.07494 | 23.77717 |
| combined | 6917 | 23.34672  (0.1288569) | 10.71684 | 23.09412 | 23.59932 |
| diff |  | -.1852571  (0.2604205) |  | -.6957612 | .3252471 |

Standard Errors are in parenthesis. \*\*\*p-value of less than 0.01.

The results for college graduates are not statisticly significant at a 95% confidence level, but the results for high school graduates are. For high school graduates, the 95% confidence interval suggests a decrease between 0.2862043 and 0.975753 with an average decrease of 0.6309. There are also statisticly significant differences for men and women.

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| Table 4. Gender Gap For High School Graduates Between 1992 And 2012 | | | | | | | | | |
|  | **Men** | | | **Woman** | | | **Difference** | | |
| Year | **Mean** | **Std. Dev.** | **N** | **Mean** | **Std. Dev** | **N** |  |  | **95% Conf. Int. for** |
| 1992 | 17.630  (0.1514204) | 7.975 | 2774 | 14.37324\*\*\*  (0.1469648) | 6.365458 | 1876 | 3.257365 | .2202519 | (2.82556- 3.68916) |
| 2012 | 17.043  (0.1864512) | 8.900 | 2279 | 13.11905\*\*\*  (0.1746657) | 6.06570 | 1206 | 3.924525 | .2860826 | (3.36361-4.48543) |

Standard Errors are in parenthesis. \*\*\*p-value of less than 0.01.

Table 4 shows the gender gap for high school graduates between 1992 and 2012. In 2012, men earned 3.924 dollars more per hour on average than women. In 1992, they earned 3.257 more. The results are highly significant. Both men and women earned more with college degrees than with just high school diplomas.

**Conclusion**

The data reveals declining AHE for high school graduates and no statistically significant increase in AHE for college graduates either, over a twenty-year period. The data also shows that men earn more than women and that the gender gap has not decreased. College Graduates Earn significantly more than High School graduates and the difference between them has increased, as AHE for high school graduates has decreased.