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log: C:\Users\Danny\Desktop\ECON 120B\HW3\HW3.txt

log type: text

opened on: 27 Jan 2023, 00:19:45

. use CPS96\_15.dta, clear

.

. \*\*\*\*Q a.i&ii

. sum ahe if year == 1996

Variable | Obs Mean Std. dev. Min Max

-------------+---------------------------------------------------------

ahe | 6,103 12.69326 6.359035 1.36 62.5

. \*display "Average hourly earnings in 1996 = 12.69326"

. \*display "Sample standard deviation for AHE in 1996 = 6.359035"

. sum ahe if year == 2015

Variable | Obs Mean Std. dev. Min Max

-------------+---------------------------------------------------------

ahe | 7,098 21.23744 12.1245 2.040816 105.7692

. \*display "Average hourly earnings in 2015 = 21.23744 "

. \*display "Sample standard deviation for AHE in 2015 = 12.1245"

. \*\*\*\*Q a.iii

. ttest ahe, by(year) unequal

Two-sample t test with unequal variances

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Group | Obs Mean Std. err. Std. dev. [95% conf. interval]

---------+--------------------------------------------------------------------

1996 | 6,103 12.69326 .0813991 6.359035 12.53369 12.85283

2015 | 7,098 21.23744 .1439117 12.1245 20.95533 21.51955

---------+--------------------------------------------------------------------

Combined | 13,201 17.28735 .0936909 10.76467 17.1037 17.471

---------+--------------------------------------------------------------------

diff | -8.544178 .1653372 -8.868268 -8.220087

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diff = mean(1996) - mean(2015) t = -51.6773

H0: diff = 0 Satterthwaite's degrees of freedom = 11049.1

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

. \*display "95% confidence interval for the population means of AHE in 1996 = [12.53369 12.85283]"

. \*display "95% confidence interval for the population means of AHE in 2015 = [20.95533 21.51955]"

. \*\*\*\*Q a.iv

. \*display "95% confidence interval for the change in the population means of AHE between 1996 and 2015 = [-8.868268 -8.220087]"

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. \*\*\*\*Q b

. ge adjusted\_ahe = ahe if year == 2015

(6,103 missing values generated)

. replace adjusted\_ahe = ahe\*(237/156.9) if year == 1996

(6,103 real changes made)

. ttest adjusted\_ahe, by(year) unequal

Two-sample t test with unequal variances

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Group | Obs Mean Std. err. Std. dev. [95% conf. interval]

---------+--------------------------------------------------------------------

1996 | 6,103 19.17338 .1229546 9.605425 18.93234 19.41441

2015 | 7,098 21.23744 .1439117 12.1245 20.95533 21.51955

---------+--------------------------------------------------------------------

Combined | 13,201 20.28319 .0964278 11.07913 20.09418 20.47221

---------+--------------------------------------------------------------------

diff | -2.064062 .1892839 -2.435086 -1.693038

------------------------------------------------------------------------------

diff = mean(1996) - mean(2015) t = -10.9046

H0: diff = 0 Satterthwaite's degrees of freedom = 13113.1

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

. \*display "Average hourly earnings in 1996 in 2015 dollar = 19.17338"

. \*display "Sample standard deviation for AHE in 1996 in 2015 dollar = 9.605425"

. \*display "95% confidence interval for the population means of AHE in 1996 in 2015 dollar = [18.93234 19.41441]"

. \*display "95% confidence interval for the change in the population means of AHE between 1996 and 2015 in 2015 dollar = [-2.435086 -1.693038]"

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. \*\*\*\*Q c

. \* I would use the results from b and compare with a because the CPI shows the real purchase power of 1996 in 2015 dollar, but without comparison, we cannot tell the change in purchasing power.

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. \*\*\*\*Q d.i

. generate ahe\_15 = ahe if year == 2015

(6,103 missing values generated)

. ttest ahe\_15, by(bachelor)

Two-sample t test with equal variances

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Group | Obs Mean Std. err. Std. dev. [95% conf. interval]

---------+--------------------------------------------------------------------

0 | 3,365 16.38111 .1471396 8.535368 16.09262 16.6696

1 | 3,733 25.61503 .2155545 13.17001 25.19241 26.03765

---------+--------------------------------------------------------------------

Combined | 7,098 21.23744 .1439117 12.1245 20.95533 21.51955

---------+--------------------------------------------------------------------

diff | -9.233924 .2665732 -9.756487 -8.711361

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diff = mean(0) - mean(1) t = -34.6394

H0: diff = 0 Degrees of freedom = 7096

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

. \*display "95% confidence interval for the means of AHE for high school graduates = [16.09262 16.6696]"

. \*\*\*\*Q d.ii

. \*display "95% confidence interval for the means of AHE for workers with a college degree = [25.19241 26.03765]"

. \*\*\*\*Q d.iii

. \*display "95% confidence interval for the difference between the two means = [-9.756487 -8.711361]"

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. \*\*\*\*Q e

. generate ahe\_96 = ahe if year == 1996

(7,098 missing values generated)

. generate adjusted\_ahe\_96 = ahe\_96\*(237/156.9)

(7,098 missing values generated)

. ttest adjusted\_ahe\_96, by(bachelor) unequal

Two-sample t test with unequal variances

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Group | Obs Mean Std. err. Std. dev. [95% conf. interval]

---------+--------------------------------------------------------------------

0 | 3,484 16.26823 .1299935 7.672919 16.01336 16.5231

1 | 2,619 23.03803 .205452 10.51424 22.63517 23.4409

---------+--------------------------------------------------------------------

Combined | 6,103 19.17338 .1229546 9.605425 18.93234 19.41441

---------+--------------------------------------------------------------------

diff | -6.769806 .2431231 -7.246445 -6.293168

------------------------------------------------------------------------------

diff = mean(0) - mean(1) t = -27.8452

H0: diff = 0 Satterthwaite's degrees of freedom = 4581.78

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0

Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

. \*display "95% confidence interval for the means of AHE for high school graduates in 2015 dollar = [16.01336 16.5231]"

. \*display "95% confidence interval for the means of AHE for workers with a college degree in 2015 dollar = [22.63517 23.4409]"

. \*display "95% confidence interval for the difference between the two means = [-7.246445 -6.293168]"

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. \*\*\*\*Q f.i

. \* No, the real wages of high school graduates did not increase a lot because the means of AHE for high school graduates in 2015 is similar to the means of AHE for high school graduates in 1996 in 2015 dollar

. \*\*\*\*Q f.ii

. \* Yes, the real wages of college graduates increase because the means of AHE for college graduates in 2015 is larger than the means of AHE for college graduates in 1996 in 2015 dollar

. \*\*\*\*Q f.iii

. \* Yes, the gap between earnings of college and high school graduates increase because the difference in means of AHE in 2015 is larger than the difference in means of AHE in 1996 in 2015 dollar

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. \*\*\*\*Q g

. table ( year female ) ( bachelor ) (), nototals statistic(mean ahe) statistic(sd ahe) statistic(frequency)

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| Education, High School Diploma = 0, Bachelors Degree = 1

| 0 1

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Year |

1996 |

Sex, Male=0; Female=1 |

0 |

Mean | 11.77404 16.45946

Standard deviation | 5.455404 7.574837

Frequency | 2,168 1,387

1 |

Mean | 9.115878 13.89213

Standard deviation | 3.859964 5.91154

Frequency | 1,316 1,232

2015 |

Sex, Male=0; Female=1 |

0 |

Mean | 17.49846 28.05536

Standard deviation | 9.026855 14.36643

Frequency | 2,222 1,917

1 |

Mean | 14.20896 23.03898

Standard deviation | 6.998409 11.21769

Frequency | 1,143 1,816

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. \* Yes, there are notable differences between the results for high school and college graduates

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. cap log close