**Question 1)** **What proportion of people work from 30 up to 50 hours per week? (3 points)**

Solution: Run analyze-descriptive-frequencies, choose WRKHRS variable and tick „display frequency tables“ and you will get:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hours worked weekly** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | One hour | 1 | ,1 | ,1 | ,1 |
| 4 | 1 | ,1 | ,1 | ,2 |
| 8 | 2 | ,1 | ,2 | ,5 |
| 10 | 2 | ,1 | ,2 | ,7 |
| 11 | 2 | ,1 | ,2 | 1,0 |
| 12 | 2 | ,1 | ,2 | 1,2 |
| 13 | 1 | ,1 | ,1 | 1,3 |
| 15 | 10 | ,7 | 1,2 | 2,5 |
| 16 | 3 | ,2 | ,4 | 2,9 |
| 18 | 1 | ,1 | ,1 | 3,0 |
| 20 | 17 | 1,2 | 2,1 | 5,1 |
| 21 | 1 | ,1 | ,1 | 5,2 |
| 22 | 1 | ,1 | ,1 | 5,3 |
| 24 | 2 | ,1 | ,2 | 5,6 |
| 25 | 6 | ,4 | ,7 | 6,3 |
| 27 | 2 | ,1 | ,2 | 6,5 |
| 28 | 2 | ,1 | ,2 | 6,8 |
| 30 | 31 | 2,2 | 3,7 | 10,5 |
| 31 | 1 | ,1 | ,1 | 10,6 |
| 32 | 1 | ,1 | ,1 | 10,8 |
| 35 | 13 | ,9 | 1,6 | 12,3 |
| 36 | 3 | ,2 | ,4 | 12,7 |
| 37 | 3 | ,2 | ,4 | 13,1 |
| 38 | 12 | ,8 | 1,5 | 14,5 |
| 39 | 1 | ,1 | ,1 | 14,6 |
| 40 | 268 | 18,7 | 32,4 | 47,0 |
| 41 | 4 | ,3 | ,5 | 47,5 |
| 42 | 64 | 4,5 | 7,7 | 55,3 |
| 43 | 12 | ,8 | 1,5 | 56,7 |
| 44 | 8 | ,6 | 1,0 | 57,7 |
| 45 | 78 | 5,4 | 9,4 | 67,1 |
| 46 | 5 | ,3 | ,6 | 67,7 |
| 47 | 5 | ,3 | ,6 | 68,3 |
| 48 | 33 | 2,3 | 4,0 | 72,3 |
| 49 | 1 | ,1 | ,1 | 72,4 |
| 50 | 92 | 6,4 | 11,1 | 83,6 |
| 52 | 3 | ,2 | ,4 | 83,9 |
| 53 | 1 | ,1 | ,1 | 84,0 |
| 54 | 1 | ,1 | ,1 | 84,2 |
| 55 | 14 | 1,0 | 1,7 | 85,9 |
| 56 | 1 | ,1 | ,1 | 86,0 |
| 60 | 43 | 3,0 | 5,2 | 91,2 |
| 64 | 1 | ,1 | ,1 | 91,3 |
| 65 | 2 | ,1 | ,2 | 91,5 |
| 66 | 1 | ,1 | ,1 | 91,7 |
| 67 | 1 | ,1 | ,1 | 91,8 |
| 68 | 1 | ,1 | ,1 | 91,9 |
| 70 | 12 | ,8 | 1,5 | 93,3 |
| 72 | 3 | ,2 | ,4 | 93,7 |
| 76 | 1 | ,1 | ,1 | 93,8 |
| 80 | 5 | ,3 | ,6 | 94,4 |
| 90 | 4 | ,3 | ,5 | 94,9 |
| 96 hours and more | 42 | 2,9 | 5,1 | 100,0 |
| Total | 827 | 57,6 | 100,0 |  |
| Missing | NAP (Code 2 or 3 in WORK;VE: Code 3 in WORK) | 590 | 41,1 |  |  |
| No answer | 18 | 1,3 |  |  |
| Total | 608 | 42,4 |  |  |
| Total | | 1435 | 100,0 |  |  |

**Answer: 83,6 – 6,8 = 76, 8 percent**

**Question 2) Whats an odds of work rather than not work (ignore third category „never worked“) for man compared to women? (3 points)**

Solution: Run analyze-descriptive-crosstabs, put SEX into rows and WORK into columns and you will get:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sex of Respondent \* Currently, formerly, or never in paid work Crosstabulation** | | | | | |
| Count | | | | | |
|  | | Currently, formerly, or never in paid work | | | Total |
| Currently in paid work | Currently not in paid work, paid work in the past | Never had paid work |
| Sex of Respondent | Male | 395 | 188 | 22 | 605 |
| Female | 432 | 346 | 34 | 812 |
| Total | | 827 | 534 | 56 | 1417 |

**Answer:** odds of work for men = 395/188 = 2,1

Odds of work for women = 432/346 = 1,25

**Odds of work for men compared to women = 1,68**

Or using shortage: (395\*346) / (432\*188) = 1,683

Interpretation: Odds of work for men is 1,683 times higher than the same odds for women.

Or alternatively, men have 1,683 higher odds for work compared to women.

Alternative solution: analyse-descriptive-crosstabs, put SEX into columns and WORK into rows and in statistics window ask for RISK and you will get this table with OR in the first row:

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk Estimate** | | | |
|  | Value | 95% Confidence Interval | |
| Lower | Upper |
| Odds Ratio for Currently, formerly, or never in paid work (Currently in paid work / Currently not in paid work, paid work in the past) | 1,683 | 1,345 | 2,105 |
| For cohort Sex of Respondent = Male | 1,357 | 1,185 | 1,553 |
| For cohort Sex of Respondent = Female | ,806 | ,737 | ,882 |
| N of Valid Cases | 1361 |  |  |

**Question 3) Test hyphotesis of equality of means of working hours per week (WRKHRS) in population of men and women (SEX) using independent t-test procedure (4 points in total). Subquestion 3a) What is conditional probability of getting current sample means difference?(1point) Subquestion 3b) On the basis of this probability, would you hold or reject null hyphotesis of no difference in population?(1point) Subquestion 3c) What is confidence interval for mean difference in population?(2points)**

Solution: Run analyze-compare means-independent smaples t-test, put WRKHRS into test variable, put SEX into grouping variable and choose „define groups“ and type 1 for group 1 and 2 for group 2 and you will get:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent Samples Test** | | | | | | | | | | |
|  | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Hours worked weekly | Equal variances assumed | ,788 | ,375 | 3,306 | 825 | ,001 | 3,650 | 1,104 | 1,483 | 5,818 |
| Equal variances not assumed |  |  | 3,306 | 818,694 | ,001 | 3,650 | 1,104 | 1,483 | 5,818 |

**Answers 3a) + 3b): Conditional probability of getting sample means difference of 3,65 if null hypothesis is true is 0,001 which is so low probability that I dont believe that this sample was drawn from population where means are equal, so I reject null hypothesis.**

**Answer 3c): With 95 percent probability true population means difference lies between 1,483 and 5,818. So, very probably, in average men work from about 1,483 to 5,818 longer per week compared to women.**