

Empirical Exercise 2.1

Calculations for this exercise are carried out in **Age_HourlyEarnings_EE2_1.xlsx**.

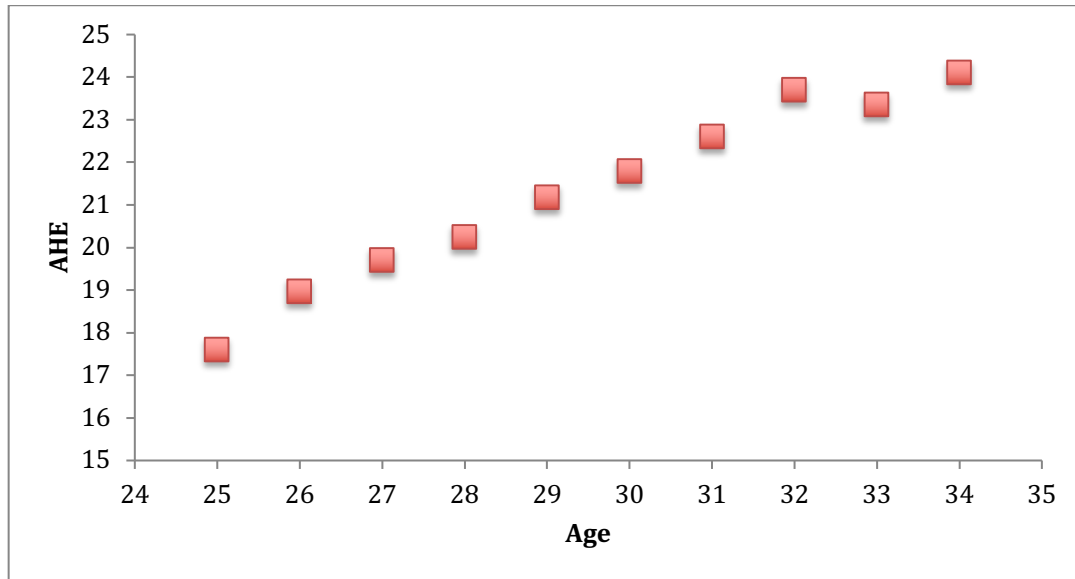
a.

<i>Age</i>	Probability (<i>Age</i>)
25	0.0848899
26	0.092230557
27	0.085471343
28	0.093393436
29	0.103495862
30	0.104731445
31	0.103931986
32	0.108074706
33	0.108801517
34	0.114979284

b.

<i>Age</i>	$E(AHE Age)$
25	17.59075075
26	18.96690372
27	19.70493315
28	20.23580196
29	21.17135268
30	21.78487058
31	22.59510473
32	23.69199959
33	23.34869462
34	24.10809159

c. Scatter plot of $E(AHE|Age)$



(d) $E(AHE) = \$21.51$

(e) – (g) Some moments:

$$E(AHE) = 21.51 \text{ (Dollars)}$$

$$E(AHE^2) = 627.53 \text{ (Dollars squared)}$$

$$E(Age) = 29.84 \text{ (Years)}$$

$$E(Age^2) = 898.40 \text{ (Years squared)}$$

$$E(AHE \times Age) = 646.01 \text{ (Dollars} \times \text{Years)}$$

$$\text{var}(AHE) = E(AHE^2) - [E(AHE)]^2 = 164.82 \text{ (Dollars squared)}$$

$$\text{Std.Dev}(AHE) = \sqrt{164.82} = 12.84 \text{ (Dollars)}$$

$$\text{var}(Age) = E(Age^2) - [E(Age)]^2 = 7.79 \text{ (Years squared)}$$

$$\text{Std.Dev}(Age) = \sqrt{7.79} = 2.79 \text{ (Years)}$$

$$\text{cov}(AHE, Age) = E(AHE \times Age) - [E(AHE) \times E(Age)] = 4.06 \text{ (Dollars} \times \text{Years)}$$

$$\text{cor}(AHE, Age) = \text{cov}(AHE, Age) / [\text{Std.Dev}(AHE) \times \text{Std.Dev}(Age)] = 0.11$$

(h) The covariance and correlation are positive: when Age is higher than its average value, AHE tends to be higher than its average value, and similarly if Age is lower than its average value. In this sense Age and AHE are positively related, which is also evident in the plot.