**Empirical Exercise 2.1**

Calculations for this exercise are carried out in **Age\_HourlyEarnings\_EE2\_1.xlsx**.

a.

|  |  |
| --- | --- |
| *Age* | Probability (*Age*) |
| 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.

|  |  |
| --- | --- |
| *Age* | 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 (Dollars)

E(*AHE*2) = 627.53 (Dollars squared)

E(*Age*) = 29.84 (Years)

E(*Age*2) = 898.40 (Years squared)

E(*AHE×Age*) = 646.01 (Dollars × Years)

var(*AHE*) = E(*AHE*2) – [E(*AHE*)]2  = 164.82 (Dollars squared)

Std.Dev (*AHE*) =  = 12.84 (Dollars)

var(*Age*) = E(*Age*2) – [E(*Age*)]2  = 7.79 (Years squared)

Std.Dev(*Age*) =  = 2.79 (Years)

cov(*AHE*,*Age*) = E(*AHE*×*Age*) – [E(*AHE*)×E(*Age*)] = 4.06 (Dollars × Years)

cor(*AHE,Age*) = cov(*AHE*,*Age*)/[ Std.Dev (*AHE*)× 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.