

## Chapter II

### Distribution Analysis (Solutions)

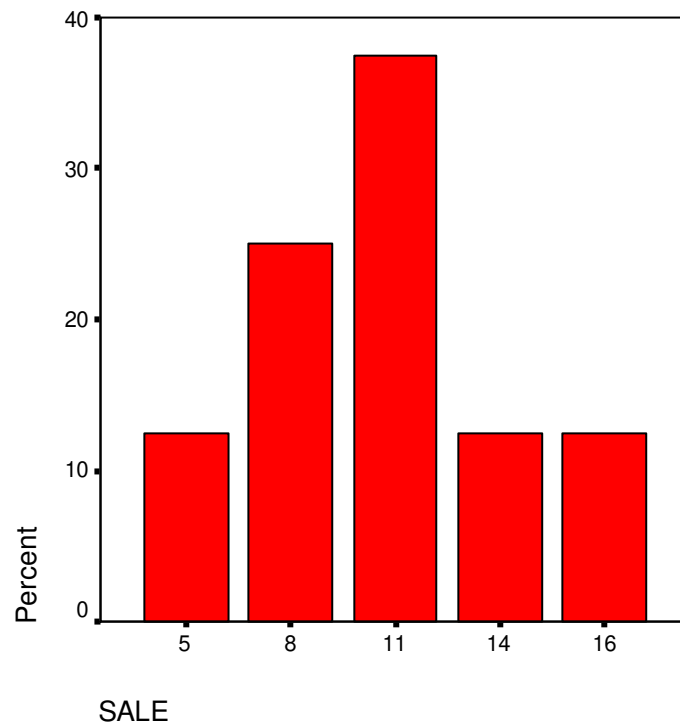
#### Part I:

#### 1.

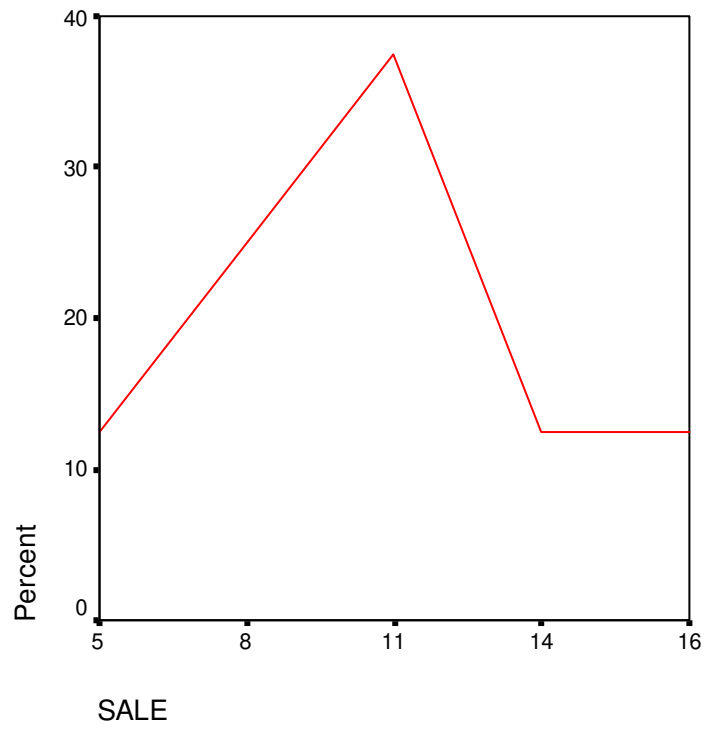
*Working Table*

$a_j$	$F(a_j)$	$f(a_j)$
5	1	0.125
8	2	0.250
11	3	0.375
14	1	0.125
16	1	0.125
	8	1.000

i)



ii)



2.

Working Table

$b_i$	$B_i$	$F_i$	$f_i$	$w_i$	$h_i$	$\sum_{j=1}^i f_j$	$m_i$
240	260	7	0.07	20	0.0035	0.07	250
260	280	20	0.20	20	0.0100	0.27	270
280	300	33	0.33	20	0.0165	0.60	290
300	320	25	0.25	20	0.0125	0.85	310
320	340	11	0.11	20	0.0055	0.96	330
340	360	4	0.04	20	0.0020	1.00	350
		100	1.00				

2.

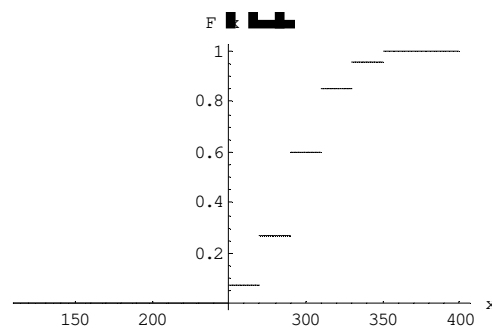
i)

$$F(x) = \begin{cases} 0.00 & -\infty < x \leq 250 \\ 0.07 & 250 < x \leq 270 \\ 0.27 & 270 < x \leq 290 \\ 0.60 & 290 < x \leq 310 \\ 0.85 & 310 < x \leq 330 \\ 0.96 & 330 < x \leq 350 \\ 1.00 & 350 < x < +\infty \end{cases}$$

ii)

$x$	$F(x)$
$]-\infty, 250]$	0.00
$]250, 270]$	0.07
$]270, 290]$	0.27
$]290, 310]$	0.60
$]310, 330]$	0.85
$]330, 350]$	0.96
$]350, +\infty[$	1.00

iii)



3.

i)  $F(296) = 0.60$

Approximately 60% of the workers have a weekly wage of less than 296 €.

ii)  $F(310) - F(275) = 0.60 - 0.27 = 0.33$

Approximately 33% of the workers have a weekly wage of at least 275 € but less than 310 €.

## Part II (SPSS):

1.

1.

*Analyze -> Descriptive Statistics -> Frequencies*

2.

Move the variable *degree* to the list box for **Variable(s)**.

Click on the **Charts** button.

3

Click on the option button for

*Bar charts -> Continue ->. OK.*

## Output and Interpretation:

### Output:

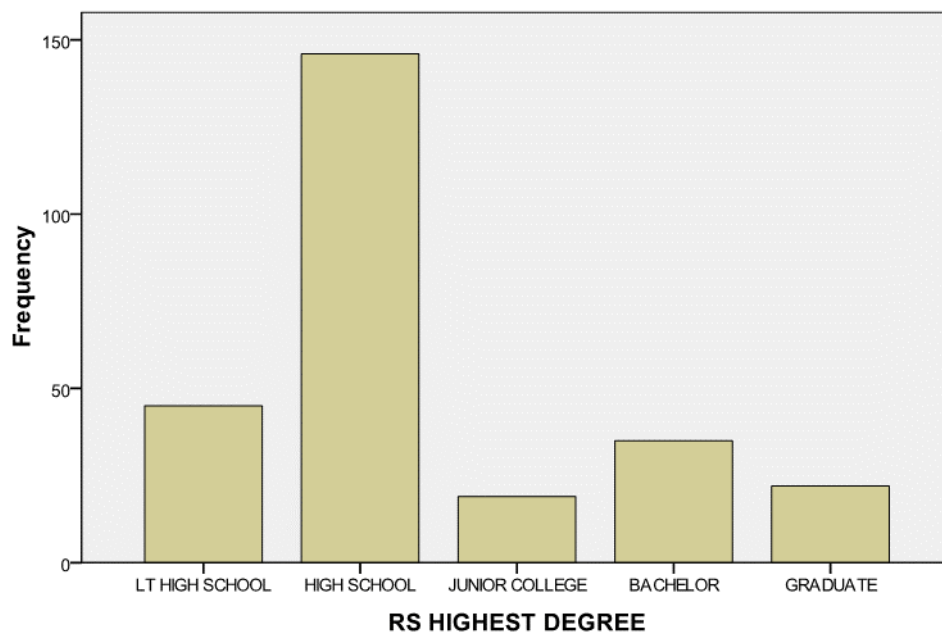
#### Statistics

RS HIGHEST DEGREE		
N	Valid	267
	Missing	3

#### RS HIGHEST DEGREE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LT HIGH SCHOOL	45	16,7	16,9	16,9
	HIGH SCHOOL	146	54,1	54,7	71,5
	JUNIOR COLLEGE	19	7,0	7,1	78,7
	BACHELOR	35	13,0	13,1	91,8
	GRADUATE	22	8,1	8,2	100,0
	Total	267	98,9	100,0	
Missing	NA	3	1,1		
Total		270	100,0		

#### RS HIGHEST DEGREE



## *Answers*

1.

There are 270 cases for analysis; 3 are missing data.

2.

See the chart above.

3.

19 survey respondents had a junior college degree.

4.

The proportion of survey respondents who had not graduated from high school is 16.9%.

(Remember that we use the *Valid Percent* column and not the *Percent* column.)

5.

The probability that a survey respondent had graduated from a high school is 0.547.

6.

The category with the largest number or percentage (also known as *mode*) is *high school* including 146 cases (54.7%).

7.

Since there are more than two categories for this variable, the problem also identifies that only 165 cases are used to compute the odds instead of the entire 267 cases.

$$\frac{146}{19} \approx 7.68; \quad \frac{19}{146} \approx 0.13.$$

(Last revised: 11.01.20)