

Case in: EXC 23041 Statistics

Handout date: 06.12.07, 09.00

Examination is held: 20.12.07, 09.00 - 12.00

Total number of pages: 7

General information

The case analysis will be the basis for 15 out of the 30 multiple choice questions. You have to bring the case text and the results of your analysis to the exam. Your analysis will hopefully supply the answers to the exam questions. You will not be required to hand in your analysis.

The case is relatively open. The questions invite to different approaches and use of different statistical methods. You should focus on the approach you find the most interesting and the methods you find to be the most relevant.

As you do not know in advance the questions that will be asked, your analysis should be a broad one. The questions in the multiple choice exam are posed in such a way that, even if you haven't worked out the exact answer required, a thorough analysis of the case will enable you to choose the right answer.

You can analyse the case on your own or together with a group of other students. What is important is that you acquire an insight into the data material, that you understand the analytical methods used and that you are able to draw the right conclusions. The multiple choice exam is an individual exam.

You will find the data here: <http://www.bi.no/users/fag87027/met8006.htm>

Case: Policies for senior employees

People live longer than before and the need for labour in the labour market is ever increasing. It is therefore important to keep people employed longer than before. Having a sound policy for benefits for senior employees has therefore become an important management issue.

A knowledge based company in the Oslo area conducted an electronic survey amongst its senior employees during the autumn of 2007. A senior employee was, in this case, defined as an employee over 55 years old. 147 employees responded to the survey. 98 of these were staff while 49 worked in the line. Ca 80% of the people who were sent the survey replied. In addition to questions related to biographical data and expected retirement age, the respondents were asked to prioritise certain measures where they were asked what type of measures for seniors they considered to be important.

This is a part of the questionnaire:

BIOGRAPHICAL DATA

gender	1=female	2=male
staff/line	1=staff	2=line
Retirement age	I proposes to retire at the age of	

ASSESSMENT of possible measures:

Measures for seniors cost, and because we all eat from the same table, it is important to asses the value of each measure with respect to its cost. We therefore ask you to answer to the best of your ability, using a scale from 1 to 5, assessing your personal value of each measure. Please use the whole scale, from 1 to 5.

1: "Not worth the money"

5: "Great benefit/cost value"

(Missing values mean unanswered questions, but you must not exclude persons that fail to answer some questions from the analysis: In SPSS choose "Exclude Cases Pairwise", do not use "Exclude cases Listwise", for instance using Explore.)

Measure

- 1 Preventive health measures, physical exercise etc.
- 2 Periodical health checks for seniors
- 3 Reduction of working hours (shorter working week)
- 4 Reduction of working hours (longer holidays)
- 5 Offer of a "Senior Talk" after 60th birthday for discussions about future work situation and possibilities.
- 6 Economic advice about the transition to full or partial retirement.
- 7 Establishing an "ombudsman" for seniors.

Data

The data are published at the end of the case text, and can also be downloaded as an Excel file from the following web address:

<http://www.bi.no/users/fag87027/met8006.htm>.

Questions

DESCRIPTIVE STATISTICS (WEIGHT 4)

The main questions are:

1. Which measures were given high priority, and by what groups?
2. Which measures is there a high degree of agreement about, and which do they disagree about – between groups and within groups?

To answer these questions it is a good idea to calculate the average (mean) and standard deviation for the 7 measures for the following groups:

- All
- Males and females
- Staff and line

PHYSICAL EXERCISE (WEIGHT 3)

Some people maintain that the males are lazier than the females and therefore less likely to support physical exercise as a senior policy measure. Perform a test.

PENSION AGE (WEIGHT 4)

It is of great importance for companies to be able to predict how many of those employed in staff functions and line functions choose to retire at a certain age. To be more precise: How many in each group can in the future be expected to retire before 67 years, at 67 years, and after 67 years. What degree of uncertainty exists?

Do the two groups differ with respect to what age they expect to retire?

(Consider the data as a random sample)

HEALTH CHECK (WEIGHT 4)

The company has previously had an annual health check for all its employees, but experience has shown that this has been a waste of money because very few health problems were discovered. As the number of senior employees increases, things might differ. In this case it might be interesting to see whether there is any relationship between the respondents' age and their assessment of periodic health checks as a measure. Investigate this, both for the group as a whole and for the males and females separately.

Statistics - case fall 2007

Nr.	age	Gender	Staff/ Line	Pension Age	Physical Exercise	Health Check	Shorter Week	Longer Holiday	Conversion	Coun- selling	Senior ombud	
1	61		2	1	65	1	1	2	3	5	2	1
2	65		2	1	67	4	5	5	3	5	4	4
3	58		2	2	62	5	1	5	5	1	5	2
4	57		1	1		3	2	4	4	3	3	3
5	57		2	1	72	4	4	3	3	4		5
6	55		2	1		5	5	3	5	5	3	3
7	59		1	2	67			1				1
8	63		2	1	70	1	1	1	5	1	1	5
9	58		2	2	62	2	2	4	4	5	5	2
10	59		2	2	67	2	3	1	2	1	4	1
11	62		2	1	70	5	5		5			1
12	57		1	2	67	4	2	4	4	5	5	5
13	62		2	1	68	3	5	3	3	3	4	3
14	56		2	1	70	5	5	1	1	1	5	5
15	62		2	1	67	1	1	3	5	3	1	1
16	57		2	1		5	4				4	
17	57		1	1	67	5	1	1	1	2	5	1
18	62		2	1	70	3	3	2	2	5	5	1
19	63		2	2	68	1	1	1	1	1	1	1
20	61		2	1	67	3	3	2	2	2	3	4
21	67		2	1	70	2	4	1	1	1	3	1
22	61		2	1	65	2	2	2	2	4	4	3
23	60		2	2	67	2	2	2	5	3	3	3
24	60		2	1	70	5	4	5	2	1	5	1
25	59		2	1	67	1	3		5	3	3	1
26	63		2	1	68	5	4	3	5	4	5	1
27	58		2	1	75	4	4			5	5	5
28	61		2	1		5	4	4	4	4	3	3
29	61		2	2	65	2	2	3	2	3	5	1
30	60		2	1	62	1	1	2	2	2	3	1
31	65		1	1	70	5	1	5	1	5	5	1
32	67		2	1	75	5	5	4	4	1	1	3
33	66		2	1	70	2	3	1	1	1	2	4
34	63		2	1	68	1	5	5	1	1	5	4
35	57		2	1	70	1	1	1	1	1	1	1
36	59		1	1	62	5	1	4	4	5	5	3
37	64		1	1		5	5	5	5	4	5	3
38	57		2	1	67	4	4	4	5	5	5	2
39	63		2	1	70	2	5	3	5	3	4	5
40	65		2	1	68	1	1	1	4		4	
41	56		1	1	67					3		1
42	60		2	1	62	1	1	5	5	5	1	1
43	59		1	1	70	1	5	1	1	1		1
44	67		2	1	75	1	1	5	1	5	3	1
45	61		2	1	67	3	3	2	3	5	4	3
46	61		2	2	62	4	3	3	4	4	4	
47	62		1	1	67	4	5	1	3	3	4	3
48	63		2	1	70	4	1	1	1	3	1	2
49	58		2	2		3	5	5	4	3	4	4
50	68		2	1	72	5	4	4	4	5	3	4

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Nr.	age	Gender	Staff/ Line	Pension Age	Physical Exercise	Health Check	Shorter Week	Longer Holiday	Conversion	Coun- selling	Senior ombud
51	65		2 1	65	4	3	5	5	5	5	5
52	61		2 1	67	1	3	3	3	3	3	3
53	59		2 1	70	1	5	1	5	1	1	1
54	66		2 1	70		4			1	1	1
55	66		2 1	67	5	4	4	4	4	5	3
56	60		2 1	70	5	5	2	4		1	1
57	56		1 2	67	5	3	2	2		4	
58	59		1 2	67	1	5	5	5	3	5	4
59	71		2 1	78	4	5	3	3	3	3	5
60	61		2 1		3	4	4	4		4	1
61	60		2 1		2	4	2	2	3	1	4
62	63		2 1	80	1	5	1	1	1	1	1
63	56		1 2	65	5	3	5	5	5	4	4
64	60		1 2	65	5	5	5	5	5	5	5
65	61		2 1		5	4	1	1	1	4	
66	59		1 2	62	4	5	4	5	5	5	4
67	65		2 1	67	1	5	1	1	1	5	1
68	56		2 2	62	1	5	3	3	1	3	1
69	56		2 1	67	5	5	2	5	5	5	2
70	60		1 2	62	5	4	3	3	3	5	4
71	58		2 2	62		3	1	5	5	4	2
72	63		2 2	70	4		3	5	3	3	4
73	58		1 2	62	1	3	3	3	5	1	3
74	62		1 2	67	3	5	4	4	1	1	4
75	59		1 2	70	3	1	3	4	1	4	1
76	61		1 2	62	3	4	5	3	5	5	4
77	57		2 1		5	3	3	3	2	1	1
78	63		2 1	70	2	4	2	2	1	2	3
79	57		1 2	67	5	5	5	5	5	5	5
80	61		2 1		3	1	2	3	2	5	2
81	58		1 2		1	3	5	2		5	1
82	62		2 2	62	1	5	5		5	5	1
83	57		2 1	67	5	1	4	4	4	3	1
84	59		1 2	67	5	3	1	2	5	5	4
85	58		1 2	67	5	4	5	5	4	5	4
86	62		1 2		5	5	5	3	3	5	5
87	59		1 2	62	5	5	5	5	4	5	1
88	56		1 2	62	4	1	5	3	4	4	4
89	61		1 1	65	5	5	5	5	1	5	1
90	56		2 1	70	3	5	5	2	5	4	4
91	57		2 1		5	3	3	4	3	4	3
92	65		1 2	67	3	3	4	5	3	5	
93	63		1 2	63	3	5	5	1	5	5	1
94	59		2 1	70	5	5	4	3	2	2	3
95	62		1 2	67	3	3	4	4	4	4	4
96	67		2 1		4	5	3	3	5	5	5
97	69		2 1	70	2	1	4	2	4	4	4
98	56		1 2	62	5	5	4	5	5	5	4
99	55		1 2	67	5	1	3	5	5	5	4
100	63		2 1		5	2	4	2	1	1	1

Statistics - case fall 2007

Nr.	age	Gender	Staff/ Line	Pension Age	Physical Exercise	Health Check	Shorter Week	Longer Holiday	Conversion	Coun- selling	Senior ombud
101	57		1 2		1	5	1	5	2	5	5
102	59		2 1	62	1	3	1	1	2	5	3
103	56		2 2			5	3	3	4	5	
104	62		1 2	63	3	3	4	4	4	4	3
105	61		2 2	67	5	3	4	5	5	4	3
106	65		1 1	67	4	4		4	3		
107	66		2 1		1	3	1	1	1	1	1
108	58		2 1	70	4	3	1	2	1	3	2
109	56		1 1		1	5	1	3	4	5	
110	62		2 1	75	2	4	2	4	1		1
111	55		2 1	67				4		4	
112	60		2 1	64	1	4	2	3	3	1	2
113	56		2 1	62	4	3	4	3	4	5	3
114	58		1 2		5	5	5	3	5	4	4
115	70		2 1		4	4	4	1	1	1	5
116	62		2 1	65	5	5	5	5	5	5	5
117	67		2 1	67	2	3	1	3	5	5	2
118	61		2 1	70	3	1	1	1	1	1	1
119	59		2 1		3	4		1	2	4	4
120	58		2 1		1	1	1	1	5	1	1
121	55		1 2	67	5	5	1	4	5	5	
122	57		1 2		5	3	4	4	5	5	5
123	56		1 2				5	5		4	1
124	55		1 1		5	2			3		1
125	62		2 1	67	3	3	2	2	4	4	2
126	57		2 1	70	4	4	2	2	1	1	1
127	65		2 1	67	5	5	1	5	1	4	5
128	61		1 2		5	5	5	3	4	5	5
129	63		2 1	67		4	2	3			4
130	60		2 1	67	4	2	1	1	5	1	1
131	58		2 1	63	1	3	1	3	1	3	2
132	58		1 1	67	5	3	1	5	1	3	3
133	65		2 2	67	2	5	4	4	3	3	3
134	69		2 2		5	3			1	5	1
135	57		1 1	67	1	1	1	1	5	1	1
136	62		2 1	70	5	5			3	5	
137	59		1 1		3	5	3	5	5	4	
138	58		2 1	70	5	5	2	2	2	1	1
139	57		2 1	70	5	5	1	1	1	1	1
140	55		2 1	62		5	4	5	3	5	
141	57		2 1	65	5	5	5	5	4		
142	62		2 2	67	5	5	1	5	3	3	3
143	63		2 1	67	1	1	4	4	3	1	2
144	65		2 1	70	5		1	1	1		
145	68		2 1	75	2	4	3	3		3	4
146	56		2 2	67	1	4	1	3	4	2	1
147	64		2 1	67	4	5	4	3	4	4	4