

Nurses Data Analysis by Applied SPSS

Aung Cho, Aung Si Thu

University of Computer Studies, Maubin, Myanmar

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ABSTRACT

SPSS is powerful to analyze nurses data. This paper intends to support hospital leaders the benefits of data analyzing with applied SPSS. This paper intends to support the hospital managers and its office managers to know whether hourly salary depends upon nurse experiences and nurse types such as hospital nurse and office nurse. Moreover it analyzes the interesting deviation condition of hospital nurses and office nurses salaries. As SPSS's background algorithms, it showed the means algorithm for tables and graph. And then Sample data 'hourly wage data.sav' was downloaded from Google and was analyzed and viewed. It used IBM SPSS statistics version 23 and PYTHON version 3.7.

KEYWORDS: SPSS is powerful to analyze nurses data

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1.1. SPSS

SPSS, standing for Statistical Package for the Social Sciences, is a powerful, user-friendly software package for the manipulation and statistical analysis of data. The package is particularly useful for students and researchers in psychology, sociology, psychiatry, and other behavioral sciences, containing as it does an extensive range of both univariate and multivariate procedures. Data analysis generally begins with the calculation of a number of summary statistics such as the mean, median, standard deviation, etc., and by creating informative graphical displays of the data such as histograms, box plots, and stem-and-leaf plots.[2]

1.2. SPSS Crosstabs

Cross-tabulation tables or contingency tables are frequently employed to examine the relationship between two variables (usually nominal or ordinal) that have a small number of categories.[4]

1.3. SPSS Graph

SPSS can display your data in a bar chart, a line graph, an area graph, a pie chart, a scatterplot, a histogram, a collection of high-low indicators, a box plot, or a dual-axis graph. Adding to the flexibility, each of these basic forms can have multiple appearances. For example, a bar chart can have a two- or three-dimensional appearance, represent data in different colors, or contain simple lines or l-beams for bars. The choice of layouts is almost endless.[3]

2. Algorithm

MEANS Algorithms [1]

Cases are cross-classified on the basis of multiple independent variables, and for each cell of the resulting

1. INTRODUCTION

Nowadays hospital businesses are competing with others not to lose their market places in local and external regions. To avoid the loss of market places they should use data science technology. This paper used SPSS integrated with Python software. This paper intends to support the hospital managers and its office managers to know whether hourly salary depends upon nurse experiences and nurse types such as hospital nurse and office nurse. Moreover it shows nurses are useful in hospital but also in offices that includes two tables, one graph and three data analytical views.

cross-classification, basic statistics are calculated for a dependent variable.

Notation Description

Notation	Description
X_{ip}	Value for the p th independent variable for case i
Y_i	Value for the dependent variable for case i
w_i	Weight for case i
P	Number of independent variables
N	Number of cases

Statistics

For each value of the first independent variable (X_1), for each value of the pair (X_1, X_2), for the triple (X_1, X_2, X_3), and similarly for the P -tuple, the following are computed:

Sum of Case Weights for the Cell

$W = \sum_{i=1}^N w_i I_i$ Where $I_i = 1$ if the i th case is in the cell $I_i = 0$, otherwise.

The Mean

$$\bar{Y}_h = \frac{\sum_{i=1}^N w_i Y_i}{W}$$

3. Testing

SPSS Code

```
GET
FILE='D:\samples files\hourlywagedata.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
MEANS TABLES=hourwage BY yr scale
/CELLS=MEAN COUNT Std. Deviation.
```

Table1: Means of salary by experience Report

Hourly Salary	
Years Experience	Mean
5 or less	18.0416
6-10	18.9169
11-15	19.6616
16-20	20.2876
21-35	21.2594
36 or more	21.6342

Graph1: Means of salary by experience Report Hourly Salary Mean

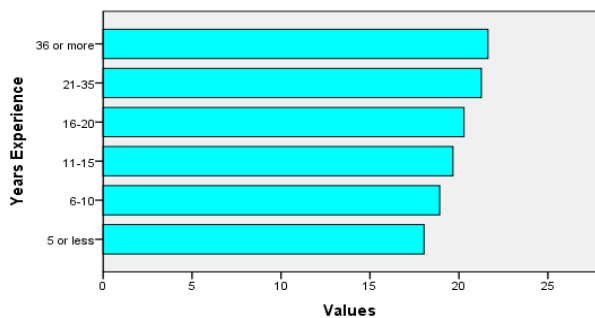


Table2: Means and Deviation Report

Hourly Salary		Mean	N	Std. Deviation
5 or less	Hospital	19.0753	147	3.37129
	Office	15.9882	74	3.98762
	Total	18.0416	221	3.86667
6-10	Hospital	19.4846	313	3.35218
	Office	17.7082	147	4.32447
	Total	18.9169	460	3.77816
11-15	Hospital	20.2412	518	3.41065
	Office	18.3784	234	4.57662
	Total	19.6616	752	3.90528
16-20	Hospital	21.1369	471	3.29487
	Office	18.7373	258	4.23293
	Total	20.2876	729	3.82786
21-35	Hospital	21.8601	350	3.48989
	Office	20.1471	189	4.82372
	Total	21.2594	539	4.08669
36 or more	Hospital	22.0641	146	3.14466
	Office	20.6534	64	4.38931
	Total	21.6342	210	3.61826
Total	Hospital	20.6764	1945	3.49582
	Office	18.6859	966	4.58852
	Total	20.0159	2911	4.00309

Analytical view:

- A. As table1 and graph1 can see more experience, more salary.
- B. As table2, means and standard deviation values show that hospital nurses got more salary than office nurses but the differences in their salaries between hospital nurse and office nurse became smaller at the later experiences. So nurse salary depends upon experience and nurse type.
- C. And then you can see the count of office nurses is nearly half of hospital nurses' count. It is true that nurses are

responsible for core guarding patients in hospitals but also offices need them to record information about patients and to control medical, financial and other actions for the hospital.

4. CONCLUSION

SPSS data analysis tools are valuable in social science, hospital business and marketing fields. It is very good for presentation report by graphical design. This paper shows that nurse salary depends upon experience and nurse type. The differences in their salaries between hospital nurse and office nurse became smaller at the later experiences. Moreover it shows nurses are useful in hospital but also in offices. Hospital leaders should try to fit the needs of employees such as hospital nurses and office nurses so that they can get their goal with a good result and can avoid the loss of market places in local and global regions by using SPSS software.

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Author Profile



Maubin, Myanmar.

Aung Cho received the B.A.(Eco) degree from Yangon University in 1987 and M.I.Sc.(Information Science) degree from University of Computer Studies, Yangon in 2001. After got Master degree, I served as a teacher at the software, information science and application departments of the computer universities. I am now with University of Computer Studies,

Author Profile



Maubin, Myanmar.

Aung Si Thu received the B.Sc. (Hons) (Chemistry) degree from Magwe University in 2003 and M. I. Sc. (Information Science) degree from University of Computer Studies, Yangon in 2009. After got Master degree, I served as a teacher at the software, information science and hardware departments of the computer universities. I am now with University of Computer Studies,