STUDY THE SATISFACTION LEVEL OF INTELLIGENT WHEELCHAIR WITH THE DISABLES - A STATISTICAL ANALYSIS

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ABSTRACT

A sensorized device which has the facility of announcing the fire gas leak in indoor environment and also detect the unauthorized person entry able to measure the distance of target to hit with load control which is designed with the support of Multiple Sensors and dedicated to wheelchair to prevent and secure the disable persons. After the design feedback received from different age groups of both gender and their disability percentage and income basis an analysis done how it is suitable to those people using SPSS package version 16.0 and the statistical study explained in this paper and correlations find out the result is positive obtained from the stakeholders hence the sensorized device is to be satisfy the need of the disables to promote their lifestyles and make them move alone without attender support to get education employment opportunities.

KEYWORDS: *Disables, IBM SPSS version 16.0, Statistical Analysis, Correlation*

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INTRODUCTION

The SPSS programming software offers progressed factual investigation, an immense library of AI calculations, text examination, open source extensibility, combination with enormous information and consistent organization into applications. Its usability, adaptability and versatility make SPSS open to clients of all expertise levels. Also, it's reasonable for tasks all things considered and levels of unpredictability, and can assist association with finding new chances, improve proficiency and limit hazard. Inside the SPSS programming group of items, SPSS Statistics underpins a top- down, speculation testing way to deal with the information while SPSS Modeler uncovered examples and models covered up in information through a base up, generation approach.

SPSS Statistics, the world's driving measurable programming, is intended to take care of business and exploration issues through specially appointed investigation, speculation testing, geospatial examination and prescient examination. SPSS is short for Statistical Package for the Social Sciences, and it's utilized by different sorts of analysts for complex measurable information examination. The SPSS programming bundle was made for the administration and measurable investigation of sociology information. It was initially propelled in 1968 by SPSS Inc., and was later gained by IBM in 2009.

Formally named IBM SPSS Statistics, most clients despite everything allude to it as SPSS. As the world standard for sociology information investigation, SPSS is broadly desired due it is clear and English-like order language and amazingly exhaustive client manual. SPSS is utilized by economic scientists, wellbeing specialists, overview organizations, government elements, training analysts, advertising associations, information excavators, and a lot more for the handling and breaking down of review information. While Survey Gizmo (Example

reference site) has ground-breaking worked in detailing highlights, with regards to top to bottom factual investigation analysts consider SPSS the top tier arrangement. Most top exploration offices use SPSS to break down review information and mine content information with the goal that they can take advantage of their examination ventures.

MATERIAL & METHODS

Data Analysis

The Information is obtained through direct examination of various responders with various age class and inabilities. Those information have been dissected by utilizing factual programming (IBM SPSS ver.16.0)

Role of the statistical model using IBM SPSS version 16.0 for the direct investigation of multiple responders with different age class and disabilities

After the equipment has been designed, an investigation was finished with many handicapped people. Their sentiment was gathered with respect to the significance and execution of the gadget appropriate to their incapacity rate indicated by Government of Tamil Nadu. For this reason, disabled peoples who are in the accompanying region considered for a significant committment. Consequently, the rural region of Thalaisengadu, Sirkali, Thirukkadaiyur, Mamakudi, Manikkapangu, Eluppore, Akkur, Sembanarkovil, Thillaiyadi, Kodankudi and Nedumaruthur are covered for information assortment. After the information assortment, the gathered information is broke down through the product of IBM SPSS version16.0 and a positive relationship is got. Table 1 shows the details of disabled persons and their feedbacks about the proposed device.

Table 1: Details of disabled persons and their feedbacks

S.No	Name	Age	Income	Percentage of disability	Comments	Kind of disability	Gender
1.	R.Deivanai	33	2000	75	Performance is Good	LD	Female
2.	Kalaiselvi	40	7000	100	Good instrument for disable	LD	Female
3.	M.Karikalan	49	4000	100	Useful and fantastic	VI	Male
4.	R.Jayanthi	55	7000	45	Useful	LD	Female
5.	Prabhakaran	38	7500	60	Unauthorized entry prevention is more useful compare to others	LD	Male
6.	Muralidass	48	5000	80	No comments	LD	Male

7.	N.Rajendran	62	Nil	80	More useful and support	LD	Male
8.	Senthamilselvan	44	8000	50	Related to disables the device designed is good	LD	Male
9.	N.Kalidass	33	7000	80	More Useful	LD	Male
10.	M.Madhavan	36	7000	100	It is more useful and applicable for VI	VI	Male
11.	Saravanan	44	7000	80	More useful to prevent accident	LD	Male
12.	Kalaiaarasi	25	2000	80	More satisfaction	LD	Female
13.	Jayakumarkeela	48	5000	100	Device is more useful	VI	Male
14.	Rajesh	31	6500	80	Is is more important for disables	LD	Male
15.	Jenittamari	20	Nil	100	This device is more useful during emergency for disables	LD	Female
16.	Kalaivanan	56	8000	65	Useful for myself	LD	Female
17.	S.Narmadhadevi	29	Nil	66	Excellent	LD	male
18.	Kaliyarasi	24	5000	80	Excellent	LD	Female
19.	Rajapillai	42	8000	75	Device is more special	LD	Male
20.	Deepa	18	6000	40	Device is most useful for disables	LD	Female

21.	Usha	36	7000	60	Device performance is excellent	LD	Female
22.	Mohanraj	30	6000	40	Device performance is most excellent	LD	Male
23.	Selvaraj	34	6500	60	Applicable	LD	Male
24.	Chandra	50	7000	50	Good	LD	Female
25.	K.Manikandan	39	15000	85	Added more feature	LD	Male
26.	Manivasakan	30	3000	40	No comments	LD	Male
27.	B.Chandrasan	70	Nil	80	All sensors are most useful so it is used for all applications	LD	Male
28.	J.Dhanalakshmi	40	Nil	50	All sensors are most useful so it is used for all applications	LD	Female
29.	Sridharan	47	6000	70	All sensors are most useful so it is used for all applications	LD	Male
30.	S.Indira	45	Nil	60	All sensors are most useful so it is used for all applications	LD	Female
31.	K.Cauveri	35	Nil	90	Fire,Gas sensor and unauthorized entry prevention are more useful	Dumb	Female
32.	G.Gnanamani	38	Nil	80	All sensors are most useful so it is used for all applications	Dumb	Male
33.	Bhuvaneswari	34	Nil	Not mentioned	Unauthorized entry prevention is more useful compare to others	LD	Female
34.	G.Valliyammai	60	Nil	50	All sensors are most useful so it is used for all applications	HD	Female

35.	R.Revathi	38	Nil	50	All sensors are most useful so it is used for all applications	HD	Female
36.	B.Revathi	40	Nil	100	All sensors are most useful so it is used for all applications	VI	Female
37.	N.Sundaramoorthi	38	Nil	50	All sensors are most useful so it is used for all applications	HD	Male
38.	P.Chandra	38	Nil	80	All sensors are most useful so it is used for all applications	LD	Female
39.	Abirami sundaram	56	1500	80	Good useful device	HD	Female
40.	Velmurugan	37	4500	50	Excellent,Future generation can use it more,Applicable to live	LD	Male
41.	Rajesh	28	10,000	70	Most useful device	LD	Male
42.	Arun	20	9000	60	Most useful device	LD	Male
43.	T.Udhayakumar	31	5000	100	Donate this device very quick	VI	Male
44.	Kavitha	43	3000	50	No comments	LD	Female
45.	Kalaivani	38	Nil	100	All sensors are most useful so it is used for all applications	HI	Female
46.	Murugan	44	Nil	50	All sensors are most useful so it is used for all applications	LD	Male
47.	Mageswari	40	Nil	40	All sensors are most useful so it is used for all applications	HI	Female
48.	Renganathan	46	Nil	50	All sensors are most useful so it is used for all applications	LD	Male

49.	K.Chandra	51	Nil	50	All sensors are most useful so it is used for all applications	LD	Female
50.	A.Anbarasan	40	5000	45	All sensors are most useful so it is used for all applications	LD	Male
51.	M.Dhaksinamoorthy	50	Nil	75	All sensors are most useful so it is used for all applications	VI	Male
52.	B.Kalaiselvi	45	Nil	100	All sensors are most useful so it is used for all applications	LD	Female
53.	R.Saraswathi	37	5000	70	All sensors are most useful so it is used for all applications	LD	Female
54.	G.Savithri	37	5000	90	All sensors are most useful so it is used for all applications	VI	Female
55.	J.Vembu	21	Nil	100	All sensors are most useful so it is used for all applications	LD	Female
56.	R.Vasuki Rethenaswamy	49	5000	60	All sensors are most useful so it is used for all applications	LD	Female
57.	M.Rethinasamy	64	6000	80	All sensors are most useful so it is used for all applications	HI	Male
58.	P.Shankar	43	8000	50	All sensors are most useful so it is used for all applications	LD	Male
59.	M.Elangovan	47	5000	50	All sensors are most useful so it is used for all applications	LD	Male
60.	A.Chellathurai	56	5000	65	All sensors are most useful so it is used for all applications	LD	Male
61.	P.Kalyanasundaram	52	6000	40	All sensors are most useful so it is used for all applications	LD	Male
62.	R.Shanthi	35	5000	65	All sensors are most useful so it is used for all applications	LD	Female

63.	S.Jayanthi	32	6000	65	All sensors are most useful so it is used for all applications	LD	Female
64.	S.Siranjeevi	35	5000	50	All sensors are most useful so it is used for all applications	LD	Female
65.	P.Meena	36	6000	65	All sensors are most useful so it is used for all applications	LD	Female
66.	V.Sudha	36	7000	90	All sensors are most useful so it is used for all applications	LD	Female
67.	A.Preethiluis	37	5000	80	All sensors are most useful so it is used for all applications	HI	Female
68.	R.Jayabal	30	5000	85	Device performance is good	HI	Male
69.	S.Varadharajan	60	5000	70	Device performance is good	CP	Male
70.	K.Sathiyakumar	26	5000	75	Device performance is good	MD	Male
71.	S.Kalyanasundaram	40	6000	50	Device performance is good	LD	Male
72.	G.Babu	34	6000	100	Device performance is good	LD	Male
73.	S.Hariharan	26	5000	75	Device performance is good	MR	Male
74.	V.Vaidhegi	28	Nil	90	Device performance is good	MR	Male
75.	K.Ilayaraja	32	Nil	80	Device performance is good	LD	Male
76.	A.Kanagasabai	63	Nil	45	Device performance is good	LD	Male

77.	C.EstharRani	55	Nil	95	Device performance is good	HI	Female
78.	S.Bhramma Rajan	45	Nil	100	Device performance is good	LD	Male
79.	S.Selvakumar	35	6000	70	Device performance is good	LD	Male
80.	K.Sundaramoorthi	37	7000	50	Device performance is good	LD	Male
81.	P.Neelamegam	34	5000	80	Device performance is good	HI	Male
82.	R.Rajendran	30	4000	100	All sensors are most useful so it is used for all applications	VI	Male
83.	S.Susi	10	Nil	100	Device performance is good	LD & MR	Female
84.	R.Abinaya	12	Nil	80	Device performance is good	MR	Female
85.	R.Atchaya	11	Nil	80	Device performance is good	MR	Female
86.	P.Rajasekar	40	3000	100	Device performance is good	MR	Male
87.	Nallathambi	45	3000	80	Device performance is good	Dumb	Male
88.	S.Vinoth	35	3000	50	Device performance is good	LD	Male
89.	M.Prakalanathan	50	3000	50	Device performance is good	Dumb	Male
90.	R.Amutha	40	3000	60	Device performance is good	Dumb	Female

91.	B.Dhanalakshmi	30	Nil	50	Device performance is good	LD	Female
92.	Iyyasamy	60	6000	50	Device performance is good	LD	Male
93.	R.Thirunavukkarasu	45	3000	50	Device performance is good	HD	Male
94.	K.Sekar	60	3000	90	All sensors are most useful so it is used for all applications	Deaf	Male
95.	Kalimuthu	35	3000	80	Device performance is good	MR	Male
96.	G.Rajalakshmi	50	7000	50	Device performance is good	LD	Female
97.	M.Palanivel	45	7000	50	Device performance is good	LD	Male
98.	A.Aravindhan	17	Nil	40	Device performance is good	HI	Male
99.	S.Kumar	40	Nil	90	Device performance is good	MR	Male
100	V.Jawahar	35	6000	50	Device performance is good	LD	Male
101	T.Murugan	40	Nil	90	Device performance is good	MR	Male
102	K.Seetha Lakshmi	60	Nil	50	Device performance is good	LD	Female
103	J.Ganesamurthy	30	Nil	90	Device performance is good	MR	Male
104	Munusamy	75	3000	50	Device performance is good Fire sensor performance is more applicable	LD	Male

105	Jaisankar	48	1000	80	All sensors are most useful so it is used for all applications	CP	Male
106	M.Popy	30	Nil	80	Safety and security device all sensor are good	MR	Female
107	K.Ramalingam	60	3000	50	All sensors are most useful so it is used for all applications,the ultrasonic sensor is most useful	LD	Male
108	A.Murugan	40	Nil	90	All sensors are good ultrasonic sensor is more useful	Dumb	Male
109	S.Arumugam	49	5000	60	All sensors are good for bed written patient the device is more useful	LD	Male

- LD-Leg Impairment
- VI-Visual Impairment
- MR-Mental Retardation CP- Cerebral Palsy
- HI-Hearing Impairment

From the above information collection of various age gathering, salary, level of disability, nature of disability, Sex and criticism of the structured equipment after continuous exhibition of unit from their home the results are gone through the SPSS bundle rendition 16.0 and connection decided the relationships is sure having estimation of 0.01 and input of the people this planned equipment is acknowledged by the persons. Table 2 and Table 3 shows the simulation result for the given information in the SPSS bundle adaptation 16.0 and the output made remarks are recorded as it. Similarly the graphical representation in given in graph 1.

Table 2: Simulation result

Output Created Comments	01-Mar-2020 17:30:13
Input Data	C:\Users\pc\Documents\spss new.sav
Active Dataset Filter	DataSet1
Weight Split File	<none>
N of Rows in Working Data File	<none>
Syntax	<none>
	109
	GRAPH
	/LINE(MULTIPLE)=COUNT BY
	Income BY Costfeasibility.
Resources Processor Time	00:00:00.406
Elapsed Time	00:00:00.484

SAVE OUTFILE='C:\Users\pc\Documents\spss new.sav' /COMPRESSED.

>Warning # 5334. Command name: SAVE

>The SAVE command has succeeded. However, due to contention for the specified

>file, the data have been saved to a file with a different name.

>Saved to C:\Users\pc\Documents\spss new_1.sav. GRAPH

/LINE(MULTIPLE)=COUNT BY Income BY Cost feasibility.

Table 3 Simulation output

Output Created		01-Mar-2020 17:31:54
Comments		
Input Data		C:\Users\pc\Documents\spss
		new_1.sav
Active Dataset		DataSet1
Filter		<none>
Weight		<none>
Split File		<none>
N of Rows in Working Data File		109
Syntax		GRAPH
		/LINE(MULTIPLE)=COUNT BY
		Income BY Costfeasibility.
Resources	Processor Time	00:00:00.250
Elapsed Time		00:00:00.266

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Graph 1: count vs income

SAVE OUTFILE='C:\Users\pc\Documents\spss new_1.sav' /COMPRESSED. GRAPH1

/LINE(MULTIPLE)=COUNT BY Age BY Comments.

On Depending the parameter of income basis and count value of the disabled person, the proposed model analyzed the feasibility of the person. On Referring table 1, the Table 3 shows the result.

Table 4: Details of disabled person

Output Created		01-Mar-2020 18:18:32
Comments		
Input Data		C:\Users\pc\Documents\spss
		new_1.sav
Active Dataset		DataSet1
Filter		<none>
Weight		<none>
Split File		<none>
N of Rows in Working Data File		109
Syntax		GRAPH
		/LINE(MULTIPLE)=COUNT BY
		Age BY Comments.
Resources	Processor Time	00:00:00.266
Elapsed Time		00:00:00.265

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Graph 2: Age vs count

RESULTS & DISCUSSIONS

From the Table 4 and graph 2, it clearly showed that the different age group of the persons with the count value and their satisfaction is drawn in this graph. Similarly the Table 5 & Table 6 shows the correlation and income feasibility of the disabled person.

Table 5: Correlation

Output Created	01-Mar-2020 18:25:49	
Comments		
Input	Data	C:\Users\pc\Documents\spss new_1.sav
	Active Dataset	Data Set1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	109
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax	DESCRIPTIVES VARIABLES=Income Cost_feasibility /STATISTICS=MEAN STDDEV MINMAX.	
Resources	Processor Time	00:00:00.000
	Elapsed Time	00:00:00.000

CORRELATIONS

/VARIABLES=Income Cost_feasibility

/PRINT=TWOTAIL NOSIG

/MISSING=PAIRWISE.

Table 6: Correlations and feasibility

Output Created		01-Mar-2020 18:27:10
Comments		
Input	Data	C:\Users\pc\Documents\spss new_1.sav
	Active Dataset	Data Set1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	109
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		

Resources	Processor Time	CORRELATIONS /VARIABLES=Income Cost_feasibility /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE. 00:00:00.047 00:00:00.063
	Elapsed Time	

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Then the Table 7 displays the correlation its value is 0.01 Hence it is positive. So the device is satisfied the people need with its multiple features.

Table 7: Correlation with value 0.001

		Income	Cost_feasibility
Income	Pearson Correlation	1	-.317**
	Sig. (2-tailed)		.001
	N	109	109
Cost_feasibility	Pearson Correlation	-.317**	1
	Sig. (2-tailed)	.001	
	N	109	109

**. Correlation is significant at the 0.01 level (2-tailed).

GET

FILE='C:\Users\pc\Documents\spss new_1.sav'. DATASET NAME DataSet1 WINDOW=FRONT.

SAVE OUTFILE='C:\Users\pc\Documents\spss new_1.sav' /COMPRESSED

>Warning # 5334. Command name: SAVE

>The SAVE command has succeeded. However, due to contention for the specified

>file, the data have been saved to a file with a different name.

>Saved to C:\Users\pc\Documents\spss new_2.sav. GET

FILE='C:\Users\pc\Documents\spss new_1.sav'. DATASET NAME DataSet1 WINDOW=FRONT. GRAPH

/PIE=COUNT BY Disability percentage.

Finally, the Table 8 shows the disability percentage collected and similarly the graph 3 is represented for the percentage. These percentages are collected from various places of Nagapattinam districts which are shown in table 1. As per the Tamilnadu Government disability card allotted to every person.

Table 8: Disability percentage

Output Created		01-Mar-2020 18:44:47
Comments		
Input	Data	C:\Users\pc\Documents\spss new_1.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	109
Syntax	GRAPH /PIE=COUNT BY Disability_percentage.	
	Processor Time	00:00:00.312
	Elapsed Time	00:00:00.314
Resources		

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Graph 3: Graphical representation of Disability percentages

GRAPH

/PIE=COUNT BY Gender.

Then the Table 9 and Graph 4 represented the gender wise classification of persons recorded in table 1.

Table 9: gender classification in disabled

Output Created	01-Mar-2020 18:55:51
Comments	
Input Data	C:\Users\pc\Documents\spss new_1.sav

Active Dataset	DataSet1
Filter	<none>
Weight	<none>
Split File	<none>
N of Rows in Working Data File	109
Syntax	GRAPH
	/PIE=COUNT BY Gender.
Resources Processor Time	00:00:00.234
Elapsed Time	00:00:00.218

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Graph 4: Graphical representations for gender classifications in disabled

GRAPH

VPIC=COUNT BY Disability.

Finally, the Table 10 and Graph 5 shows the various persons affected by disability reported in Table 1 that is Visually Impaired, Leg Disabled, Hand disabled, dumb, Deaf, Mentally retarded, Hearing Impaired and CP multiple disorders.

Table 10: Report based on different disabilities

Output Created	01-Mar-2020 18:59:15
Comments	
Input Data	C:\Users\pc\Documents\spss
	new_1.sav
Active Dataset	DataSet1
Filter	<none>
Weight	<none>
Split File	<none>
N of Rows in Working Data File	109
Syntax	GRAPH
	/PIE=COUNT BY Disability.
Resources Processor Time	00:00:00.203
Elapsed Time	00:00:00.204

[DataSet1] C:\Users\pc\Documents\spss new_1.sav

Graph 5: Graph based on different disabilities

CONCLUSIONS

In this research, the proposed model of smart sensor based gadget for Specially Abled Persons is planned having various kinds of six modules. The proposed is assembled in well manner and their working is checked with different exhibitions with the partners and income fulfillment level. These parameters are verified with various age groups and disability percentage is resolved in SPSS packages. This proposed work is acknowledged by the people and their fulfillment is at high level with the high correlation value

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