

ANALYSIS OF WOMEN HARASSMENT IN VILLAGES USING CETD MATRIX MODEL

1. Mr.M.Suresh

2. Ms.J.Greeda

Research scholar, Department of Mathametics, SPIHER, Avadi, Chennai-54

Assistant Professor, Department of Mathametics, SPIHER, Avadi, Chennai-54

ABSTRACT:

First to use matrix theory in the analysis of raw data. The method of applying matrices in this way makes one know the results and conclusions by just looking at it. Thus the final data is given in graph representation. In this paper, we are analyzing the data which is time dependent. We construct three types of matrices called Average Time Dependent Data Matrix (ATD Matrix) , Refined Time Dependent Matrix (RTD Matrix) and Combined Effective Time Dependent Data Matrix (CETD Matrix). We describe the working of this type of matrix model by working with the real world problems. It is proved this model is effective and elegnet.

KEYWORDS:

ATD Matrix, RTD Matrix, CETD Matrix, adult females torment.

INTRODUCTION:

The term harassment can mean different things and can take place in different settings, including home, place of work, and school or via the phone or the internet. The person carrying out the harassment might be a neighbor or groups of people living nearby, an ex-partner, family members or someone at work or school. Investigating about gender. Searching, reading and deepening on the subject. Sometimes we think, what is the current situation in relation to gender equality? Coincidence or causality of life. Because there is still a significant inequality, more than we imagine or think. Everywhere there is still work to be done, there is still a children who have no access to basic education about harassment. This paper has two sections. In the first section we just recall the methods of applications of CETD matrix. The section two we apply the four types of harassment by using CETD model to find out the peak age of group of women get harassed. In final section we derived conclusions and gives suggestion based on our study.

“A fuzzy matrix is a matrix with elements having values in the fuzzy interval”. In this article, the unit interval $[0,1]$ and the interval $[-1,1]$ are called fuzzy intervals [3].

Fuzzy matrix or CETD matrix model is the one which helps to analysis is carried out in five stages. In this 1st stage the collected raw data, which is time dependent is made into an Initial Raw Data (IRD)matrix. By taking along the rows the time period (if may be age group hours of the day depending of the problems under analysis).

The columns of the initial raw data matrix correspond to the attributes or concepts carefully chosen by the expert.

The IRD matrix may not in general be uniform for the length of the interval of time period may not be the same. In the 2nd stage the IRD matrix is transformed into an Average Time Dependent Data (ATD) matrix(a_{ij}).

So in the 2nd stage, inorder to obtain an unbiased uniform effect on each and every data collected, we transform this initial matrix into an Average Time-Dependent Data (ATD) matrix (a_{ij}). To make the calculations simpler, in the 3rd stage, We use the simple average Time-dependent data (ATD) matrix with e tries e_{ij} where $e_{ij} \in \{-1,0,1\}$. We name this matrix with entries as the Refined Time Dependent Data.

5.2 The method of application of CETD matrix:

We give a very simple but a very effective technique on the collected data. From that data four attributes are chosen and the entries are recorded in a form of matrix by taking ages along the columns and types of harassment along the rows.

5.2.1 Average Time Dependent (ATD) matrix:

Raw data transform it into a raw time dependent data matrix by taking along the rows the age groups and along the columns types of harassments using the raw data matrix we make it into the Average Time Dependent Data (ATD) matrix (a_{ij}) by dividing each entry of the raw data matrix by the number of years i.e., the time period. This matrix represents a data, which is totally uniform. At the third stage we find the average and standard Deviation (S.D) of every column in the ATD matrix.

5.2.2 Refined Time Dependent (RTD)matrix:

Using the average μ_j of each j^{th} column and σ_j the S.D of the each j^{th} columnwe chose a parameter α from the interval $[0,1]$ and the Refined time dependent matrix (RTDmatrix).

Using the formula

If $a_{ij} \leq (\mu_j - \alpha \sigma_j)$ then $e_{ij} = -1$ else

If $a_{ij} \in (\mu_j - \alpha \sigma_j, \mu_j + \alpha \sigma_j)$ then $e_{ij} = 0$ else

If $a_{ij} \geq (\mu_j + \alpha^* \sigma_j)$ then $e_{ij} = 1$ else

We redefine the ATD matrix into the Refined time dependent fuzzy matrix for there the entries are $\{-1, 0$ or $1\}$. Now the row sum of this matrix gives the maximum age group.

5.2.3 Combined Effective Time Dependent Data (CETD) matrix:

We also combine the above RTD matrices by varying the $\alpha \in [0, 1]$ so that we get the Combined Effective Time Dependent Data (CETD) matrix. The row sum is obtained for CETD matrix and conclusions are derived based on the row sums. All these are represented by graphs and graphs play a vital role in exhibiting the data.

5.3 Description of the problems:

Estimation of maximum age group of women gets harassed using 7×4 matrices:

In this section we apply 4 types of harassment

H_1 – Psychological harassment

H_2 –Sexual orientation harassment

H_3 –Cyber harassment

H_4 – Workplace harassment

CALCULATION:

We now illustrate how the mean and Standard Deviation are used in matrices.

Mean of n terms x_1, x_2, \dots, x_n is given by

$$\frac{x_1 + x_2 + \dots + x_n}{n} = \bar{X}$$

And

Standard Deviation of X_1, \dots, X_n is given by $\sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$

Age	H ₁	H ₂	H ₃	H ₄
10-18	0.777	0.777	1	0.888
19-24	1.333	1.5	1.33	1.5
25-29	1.8	1.2	1.4	1.2
30-39	0.7	0.4	0.6	0.7
40-48	0.888	0.777	0.555	0.555
49-54	1	1	1	0.666
55-69	0.4	0.8	0.6	0.8

Using equation (1) we get mean or average for,

$$H_1=0.985$$

$$H_2=0.922$$

$$H_3=0.926$$

$$H_4=0.901$$

Using equation (2) we get Standard Deviation

To find S.D, first we have to find $(H_1 - (H_1 \text{ mean}))^2$ i.e., In each number of H₁ column was subtracted from its mean, then we get some new values for H₁ column and add all these values we get $\sum(H_1 - (H_1 \text{ mean}))^2$ and then divided by n-1 here n=7 so n-1=6 finally we get that $\sqrt{\frac{\sum(H_1 - (H_1 \text{ mean}))^2}{6}}$

$$\therefore \text{S.D of } H_1 \text{ is } 0.4586$$

Similarly, we can find

$$\text{S.D of } H_2 \text{ is } 0.3529$$

$$\text{S.D of } H_3 \text{ is } 0.3534$$

$$\text{S.D of } H_4 \text{ is } 0.3352$$

Here after we construct a matrix using (A)

The refined dependent data matrix corresponding to a single value of $\alpha=0.4$ is

$$\begin{bmatrix} -1 & -1 & 00 \\ 1 & 1 & 11 \\ 1 & 1 & 11 \\ -1 & -1 & -1-1 \\ 0 & -1 & -1-1 \\ 0 & 0 & 0-1 \\ -1 & 0 & -1 \quad 0 \end{bmatrix}$$

The corresponding row sum of the above refined time dependent data matrix is given by

Row sum for the first row is -2

Row sum for the second row is 4

Row sum for the third row is 4

Row sum for the fourth row is -4

Row sum for the fifth row is -3

Row sum for the sixth row is -1

Row sum for the seventh row is -2

Similarly, we have to construct the matrix for the value of $\alpha=0.5$ and $\alpha=0.6$

Finally, we add each RTD matrix row by row then we get CETD matrix.

Hence, we form the combined effect time dependent data matrix which gives the combined effect of all the values of alpha in the interval [0,1]. Thus, the highest value of the row for the 3 corresponding time period identified from the row sums of the combined time dependent data matrix is observed as the best peak age of harassment. The next value of the row sum in the small matrix is observed to be the next peak age of the harassment.

Table1: Initial raw data matrix of women gets harassed order 7×4

Age	H ₁	H ₂	H ₃	H ₄
10-18	7	7	9	8
19-24	8	9	8	9
25-29	9	6	7	6
30-39	7	4	6	7
40-48	8	7	5	5
49-54	6	6	6	4
55-69	2	4	3	4

Table 2: Initial ATD matrix of women gets harassed order 7×4

Age	H ₁	H ₂	H ₃	H ₄
10-18	0.777	0.777	1	0.888
19-24	1.333	1.5	1.33	1.5
25-29	1.8	1.2	1.4	1.2
30-39	0.7	0.4	0.6	0.7
40-48	0.888	0.777	0.555	0.555
49-54	1	1	1	0.666
55-69	0.4	0.8	0.6	0.8

Table 3: Average and S.D of the above given ATD matrix.

Average	0.985	0.922	0.926	0.901
S.D	0.4586	0.3529	0.3534	0.3352

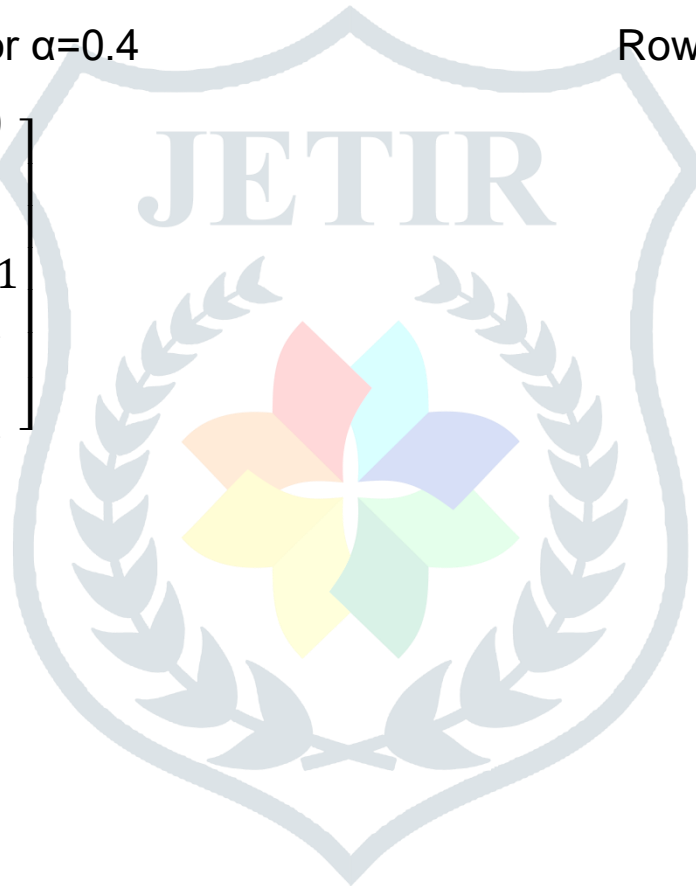
We have taken the value $\alpha=0.4, \alpha=0.5$ and $\alpha=0.6$

The RTD matrix for $\alpha=0.4$

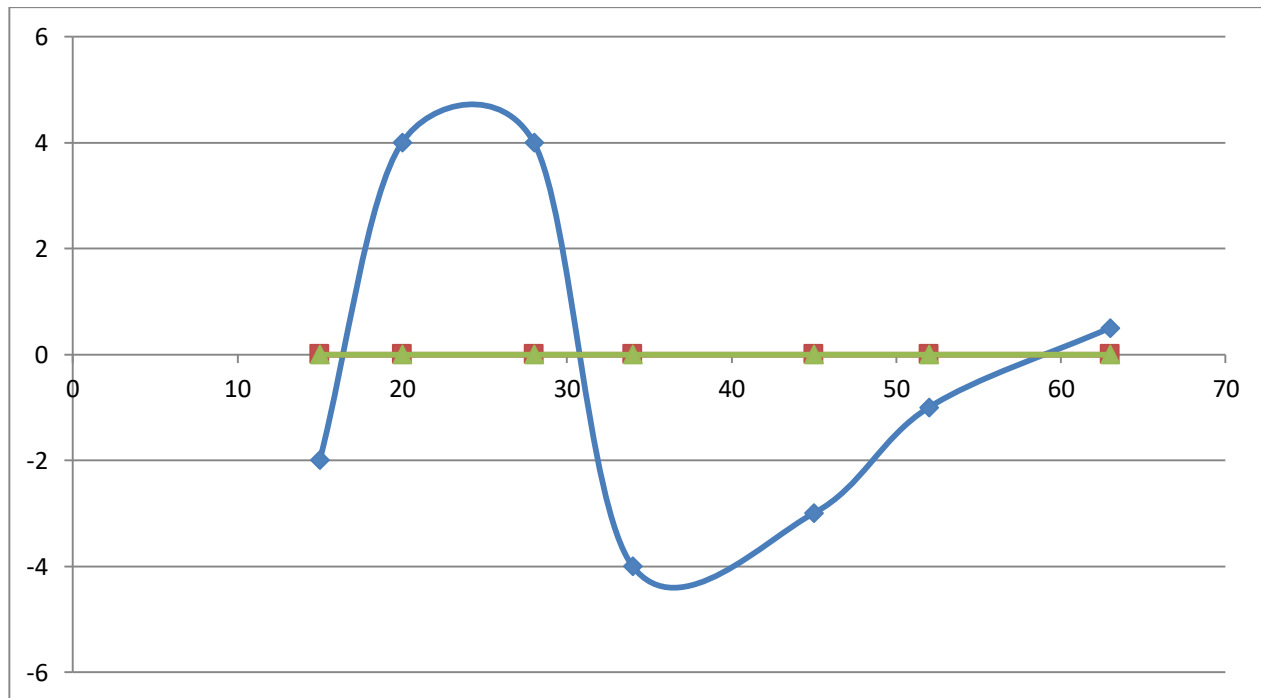
Row sum matrix

$$\begin{bmatrix} -1 & -1 & 0 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ -1 & -1 & -1 \\ 0 & -1 & -1 \\ 0 & 0 & 0 \\ -1 & 0 & -1 \end{bmatrix}$$

$$\begin{bmatrix} -2 \\ 4 \\ 4 \\ -4 \\ -3 \\ -1 \\ -2 \end{bmatrix}$$



Graph 1: Interpreting maximum age group of women gets harassed
 $\alpha=0.4$



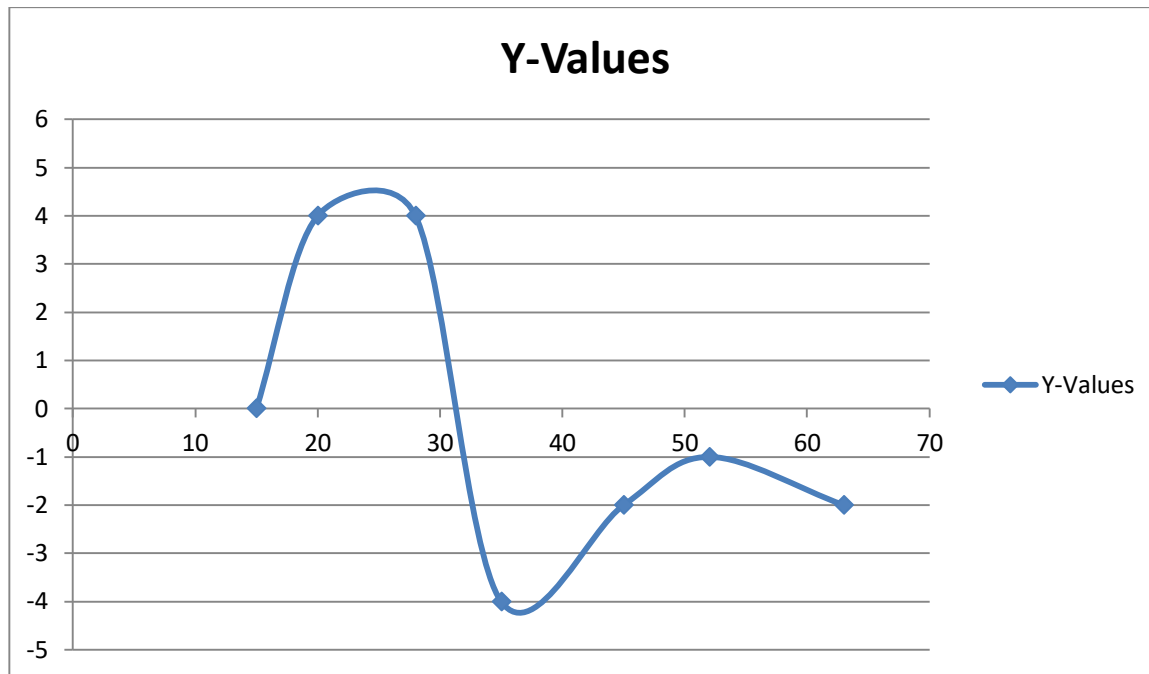
The RTD matrix for $\alpha=0.5$

Row sum matrix

$$\begin{bmatrix}
 -1 & -1 & 0 \\
 1 & 1 & 1 \\
 1 & 1 & 1 \\
 -1 & -1 & -1 \\
 0 & -1 & -1 \\
 0 & 0 & 0 \\
 -1 & 0 & -1
 \end{bmatrix}$$

$$\begin{bmatrix}
 0 \\
 4 \\
 4 \\
 -4 \\
 -2 \\
 -1 \\
 -2
 \end{bmatrix}$$



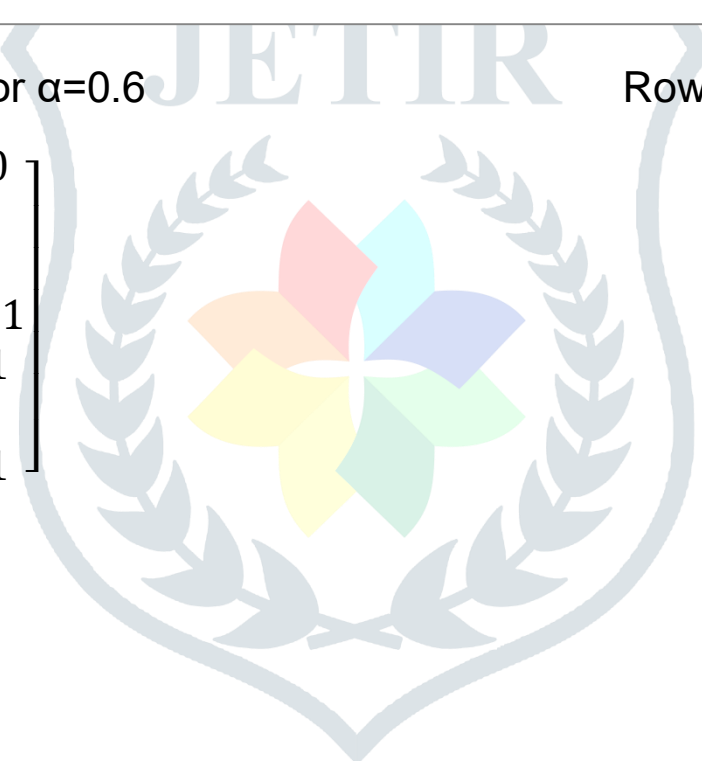


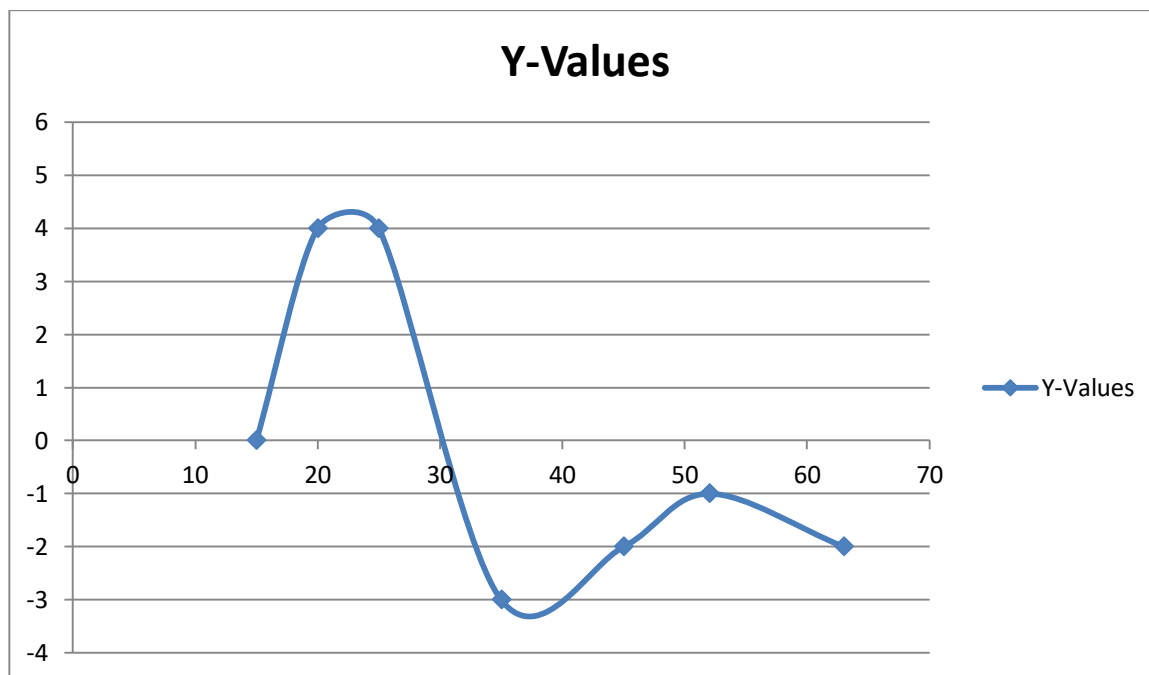
The RTD matrix for $\alpha=0.6$

Row sum matrix

$$\begin{bmatrix}
 -1 & -1 & 0 \\
 1 & 1 & 1 \\
 1 & 1 & 1 \\
 -1 & -1 & -1 \\
 0 & -1 & -1 \\
 0 & 0 & 0 \\
 -1 & 0 & -1
 \end{bmatrix}$$

$$\begin{bmatrix}
 0 \\
 4 \\
 4 \\
 -3 \\
 -2 \\
 -1 \\
 -2
 \end{bmatrix}$$



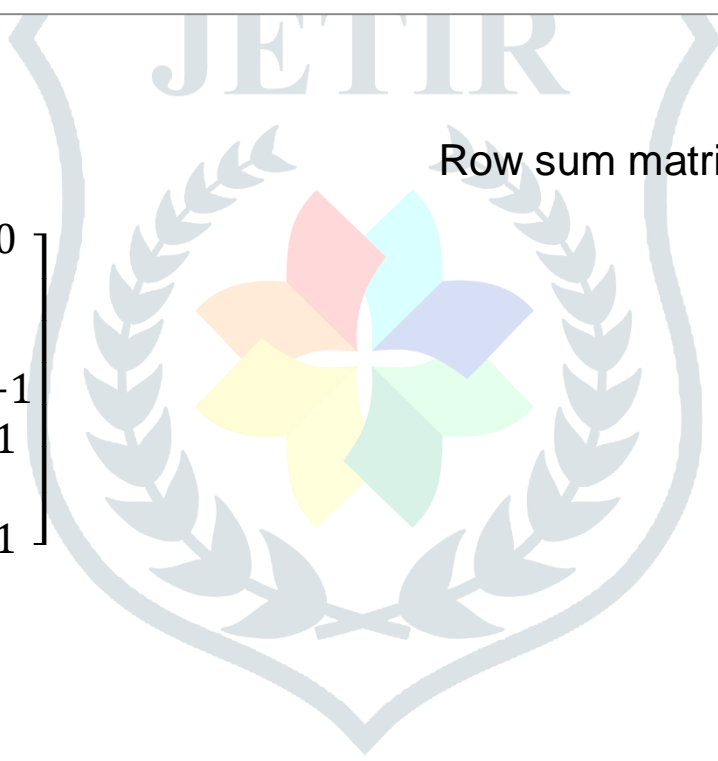


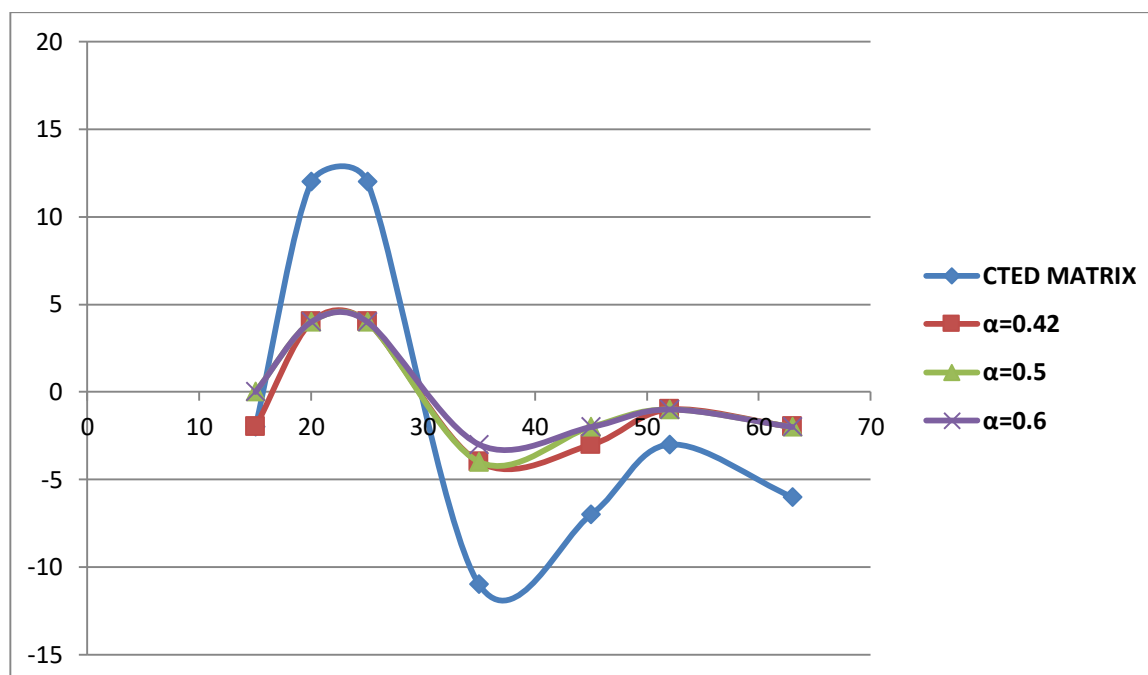
The RTD matrix

$$\begin{bmatrix} -1 & -1 & 0 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ -1 & -1 & -1 \\ 0 & -1 & -1 \\ 0 & 0 & 0 \\ -1 & 0 & -1 \end{bmatrix}$$

Row sum matrix

$$\begin{bmatrix} -2 \\ 12 \\ 12 \\ -11 \\ -7 \\ -3 \\ -6 \end{bmatrix}$$





CONCLUSION:

The harassment starts at the age of 14. The maximum age group of women get harassed between the age 21 to 27. It happens only due to the lack of awareness. IN this case the primary prevention is the key, i.e, information and training. It is better to prevent it from occurring, and not to act when it has already occurred. The base and the starting point is education in schools. Another pillar is to empower people to develop self-respect among many others. Plenty to be done, but you have to make visible what has already be done and if it works, it's okay. We all can contribute our bit.

Rescuing two aspects of this discourse, as one sees people who need help but do not know how; if this is really a globalized fact many people tend to think that are people there who want to contribute their bit and do not know how; therefore, as discussed it is necessary to do something, find a solution but one should really have an impact, to reach the people, for it is necessary to adapt to each situation, make plans tailored and customized to each group, actually that are really effective.

Women within this world play an important role in society than men and in some cases, are the only family provider. No country can truly develop, unless their political and economic system, unless women are treated equally and possess the same amount of political and economic power as men do.

While it may help us sleep at night to imagine that women can protect themselves by taking a self-defense class and walking in pairs at night, this simply does not match the reality of the issue. Cultures across the globe are raising boys to be violent and are undervaluing femininity. This cannot simply be changed by rewriting a few laws or by teaching women how to protect themselves.

What is the alternative? Sexual violence is a much broader, more culturally coded issue than many are comfortable believing, so how does one begin to create a culture that

does not tolerate violence against women and raises males to be as empathetic and nurturing as they are strong and confident? Unfortunately, there is no simple answer.

Complex, deep-rooted problems call for complex, deep-rooted solutions. Change needs to happen at all levels—international organizations, national governments, local governments, families, and individuals. With this idyllic vision of co-operation, norms of violence will gradually shift towards norms of respect and empowerment of women.

REFERENCE :

- [1] W.B. Vasantha kandasamy, Florentin Smarandache and Ilanthenral, 'Elementary Fuzzy Matrix Theory and Fuzzy Models for Social Scientists', Printed in United States of America, 2007.
- [2] Kandasamy W.B, Elementary Fuzzy Matrix Theory and Fuzzy Models, Automation, 2007.
- [3] A.Victor Devadoss, M.Clement Joe Anand, "Dimensions of Personality of women in Chennai Using CETD Matrix". International Journal of Computer Applications, July-2012.
- [4] Zadeh, L.A., "Fuzzy Sets", Information and Control, 8 (1965), 338-353
- [5] Kosko, Bart (1992). Neural Networks and Fuzzy Systems, Prentice-Hall, Englewood Cliffs, New Jersey.
- [6] Kosko, Bart (1986), Fuzzy Cognitive Maps, International Journal of Man – Machine studies, 34, 65-75
- [7] Klir, G.J., and Yuan, B., Fuzzy Sets and Fuzzy Logix: Theory and Applications, Prentice Hall, Englewood Cliffs NJ, 1995.
- [8] Corsini, R.J. 1999. , The Dictionary of psychology', Philadelphia: Brunner/Mazel.
- [9] Abbey, A., McAuslan, P., Zawacki, T., Clinton, A., and Buck, P. (2001). Attitudinal, experiential, and situational predictors of sexual assault perpetration. J. Interpers. Violence 16(8): 784-806
- [10] Abbey, A. (1991). Acquaintance rape and alcohol consumption on college campuses: How are they linked? J. Am Coll Health 39:165-169
- [11] P. Craiger and M.D. Coovert. Modelling dynamic social and psychological processes with fuzzy cognitive maps. In Proc. 3rd IEEE conf. Fuzzy Systems, 1994.
- [12] Brake, D. and Williams, V. (1997). Sexual Harassment: Let the punishment fit the crime. The chronicle of Higher Education 43:56-59
- [13] B. Kosko. Fuzzy Engineering. Prentice Hall, New York, 1997.
- [14] Phares, E.J. 1991. Introducing to psychology (3rd ed.). New York: Harper Collins Publishers.
- [15] Hartley, M. 2002. "Overcoming common problems, Managing Anger at work". London: Sheldon Press.