



AN ANALYSIS OF FACTS, CAUSES AND CONSEQUENCES OF DIVORCE USING FUZZY MATRIX

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ABSTRACT

This paper studies a CETD Model for finding out the peak age of people who have gone through divorce in families of Nagapattinam. Here, the data is analyzed using RTD Matrix and some useful suggestions are made.

Keywords : *ATD Matrix, RTD Matrix and CETD Matrix.*

I INTRODUCTION

Divorce is also known as dissolution of marriage is the termination of a marriage or marital union, the canceling or reorganizing of the legal duties and responsibilities of marriage, thus dissolving the bonds of matrimony between a married couple under the rule of law of the particular country or state. A divorce is a court judgement ending a marriage. The court requires a “legal reason” for the divorce. Grounds or reasons for a divorce are discussed starting at question 13; In addition to legally ending your marriage the court looks at other issues which need to be decided before the divorce become final.

I.Wolcott, J.Hughes (1999)says the personal family and costs of high rates of marriage breakdown and divorce has focused national attention on developing policies and strategies to prevent family breakdown. The majority of men and women in the study affection dimensions of their marriage relationship-encompassing communications problems, incompatibility, changed life style desires and instances of infidelity-as the main reason for divorce.

P.R.Amato(2003) says infidelity was the most commonly reported cause followed by incompatibility, drinking or drug use and growing apart. People’s specific reasons for divorcing varied with gender social class and life course variables.

A-M.Ambert(2003)says “ Divorce is the final termination of marriage, canceling the legal duties and responsibilities of marriage and dissolving the bonds of marriage between husband and wife. Divorce is one of the hardest things a family can go through. This has forced people to think that it is becoming a global trend. The family structure is disintegrating worldwide and spreading like an epidemic. All over the world, the divorce rate among couples is increasing at an alarming rate. Many studies and researches have come forward to discuss this social phenomenon. Most of these studies try to focus on the common causes of divorce.

Speaking to express judge of principal family court a Parthasarathy said, “ Over the years, there has been an alarming increase in the number of couples seeking a divorce. Earlier, there used to be a stigma and this would lead to compromise and adjustment in realtions. But now a days the stigma has disappeared and people are walking in every day and seeking for divorce and separation”. In the year 2015, the opening balance of the civil cases in the family court stood at 1260 and ended with 723. Each year, the number of cases being filled is increasing every month. The fuzzy set theory was introduced by professor Lofti A.Zadeh in 1965 and can be seen as an infinite value. Fuzzy logic theory is based on making the membership function lie over a range of real numbers from 0.0 to 1.0. In this paper, by using RTD matrix analysis the maximum age group of people who divorced.

This paper is organized as follows: Section 2 discusses the basic concept of ATD, RTD and CETD Matrix. Section 3 gives the description of the problem and causes of divorce. In section 4 we discusses the maximum age group people get divorce, with this knowledge

3 x 7 matrix is constructed and solved. The conclusion is included in Section 5.

II THE CONCEPT OF ATD, RTD AND CETD MATRIX

2.1 Average time dependent (ATD) matrix

Raw data is transformed into a raw time dependent data matrix by taking along the rows the details of the age group and along the columns the number of occurrences of different reasons. 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.

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} column we choose a parameter α from the interval and form the interval $[0,1]$ and form the interval $[0,1]$ form the Refined time dependent Matrix (RTD matrix), Using the formula

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

$$\text{If } a_{ij} \in (\mu_j - \alpha * \sigma_j, \mu_j + \alpha * \sigma_j)$$

$$\text{then } e_{ij} = 0 \text{ else}$$

$$\text{if } a_{ij} \geq (\mu_j + \alpha * \sigma_j) \text{ then } e_{ij} = 1.$$

We redefine the ATD matrix into the Refined time dependent fuzzy matrix for here the entries are = 0 or 1. Now the row sum of this matrix gives the maximum age group.

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 by the simplest means, which can be even understood by a layman.

III DESCRIPTION OF THE PROBLEM

We have interviewed 100 married couples in Nagapattinam town. The causes of divorce, we analyze these problem using fuzzy matrix, we call the RTD matrix is fuzzified by the entries from the set $\{-1,0,1\}$.

In this paper we will discuss facts of divorce, which are taken as the columns of the initial row matrix data, the age group in years, 21-32, 32-60, 61-80.

In the first stage, we given the matrix representation of the raw data. The 3×7 matrix is not uniform. i.e. the number of individual years in each interval may not be the same. So in the second stage, in order to obtain an unbiased uniform effect on each and every data so collected, transform this initial matrix into an Average Time Dependent Data (ATD) matrix. To make the calculations easier and simpler, in the third stage using the simple average techniques convert the above average time dependent data matrix into a matrix with entries $e_{ij} \in \{-1,0,1\}$. We name this matrix as the Refined Time Dependent Data Matrix (RTD Matrix) or as the fuzzy matrix. The value of corresponding e_{ij} to each entry is determined in a special way. At the fourth stage using the fuzzy matrices we obtain the Combined Effect Time Dependent Data Matrix (CETD matrix). Which gives the cumulative effect of all these entries. In the final stage we obtain the row sums of the CETD matrix. The graph of the RTD matrix and CETD matrix are given.

3.1 Causes of divorce

In life, there is happiness and worries, which men/women to face and try to solve problems. In a marriage compromise should be from both sides. Relation of husband and wife makes life beautiful and lovable, but unfortunately, most of the couples these days fail to understand its beauty and charm. They mostly quarrel with each and end of this can be in the divorce.

Divorce is one of the hardest things a family can go through. Many studies and researches have come forward to discuss this social phenomenon.

In our study, we have interviewed 100 married couples in different ages. In the collected data, we mainly concentrate on the seven most common factors. Causing divorce, which are listed below.

- i. Infidelity (R_1)
- ii. Communication break down (R_2)
- iii. Marital financial Issues (R_3)
- iv. Religious and cultural Strains (R_4)
- v. Difference in expectations and priorities (R_5)
- vi. Impulse wedding (R_6)
- vii. Joint family (R_7)

ESTIMATION OF MAXIMUM AGE GROUP PEOPLE GET DIVORCE BY USING 3 X 7 MATRICES

In this section, we take seven attributes related to divorce namely



R_1 – Infidelity, R_2 – Communication break down, R_3 – Marital financial Issues,

R_4 – Religious and cultural strains, R_5 – Difference in expectations and priorities, R_6 – Impulse wedding, R_7 – Joint family

Initial raw data matrix of order 3×7

Years	R_1	R_2	R_3	R_4	R_5	R_6	R_7
21-32	28	25	30	28	28	30	30
32-60	10	22	15	12	20	23	24
61-80	15	20	10	30	10	28	30

The ATD Matrix of order 3×7

Years	R_1	R_2	R_3	R_4	R_5	R_6	R_7
21-32	2.33	2.5	2.3	2.3	2.5	2.5	2
32-60	0.34	0.51	0.41	0.68	0.79	0.82	1.72
61-80	0.75	0.5	1.5	0.5	1.4	1.5	1

Average and standard deviation of the above ATD Matrix

Average	1.14	1.17	1.40	1.16	1.56	1.60	1.57
S.D	1.05	1.15	0.94	0.99	0.86	0.84	0.51

The RTD matrix for $\alpha = 0.25$

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

The RTD matrix for $\alpha = 0.45$

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

The RTD matrix for $\alpha = 0.65$

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

The RTD matrix for $\alpha = 0.75$

The row sum matrix

$$\begin{bmatrix} 7 \\ -5 \\ -4 \end{bmatrix}$$

The row sum matrix

$$\begin{bmatrix} 7 \\ -6 \\ -3 \end{bmatrix}$$

The row sum matrix

$$\begin{bmatrix} 7 \\ -4 \\ -2 \end{bmatrix}$$

The row sum matrix

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

The CETD matrix

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

$$\begin{bmatrix} 7 \\ 0 \\ -1 \end{bmatrix}$$

The row sum matrix

$$\begin{bmatrix} 28 \\ -15 \\ -10 \end{bmatrix}$$

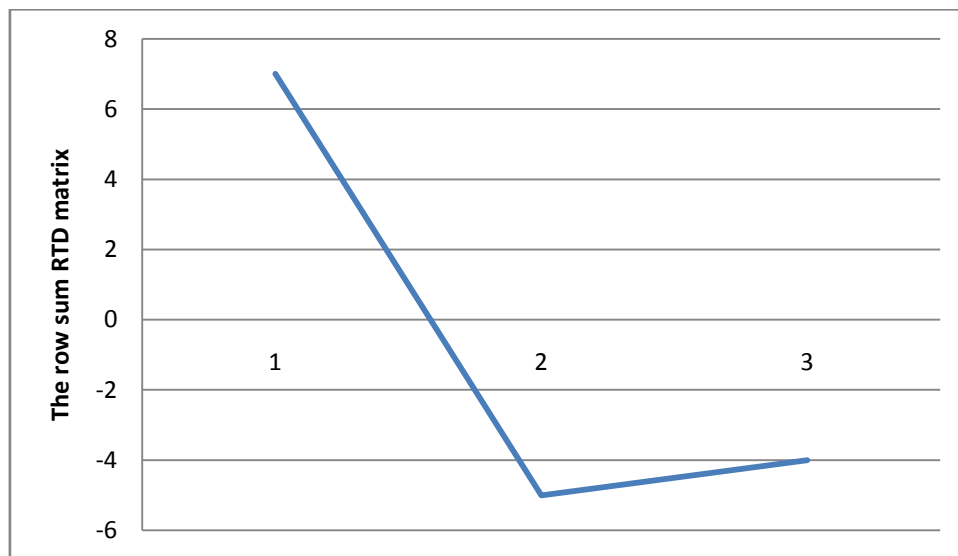


Figure 1 : Maximum age group gets divorce $\alpha = 0.25$

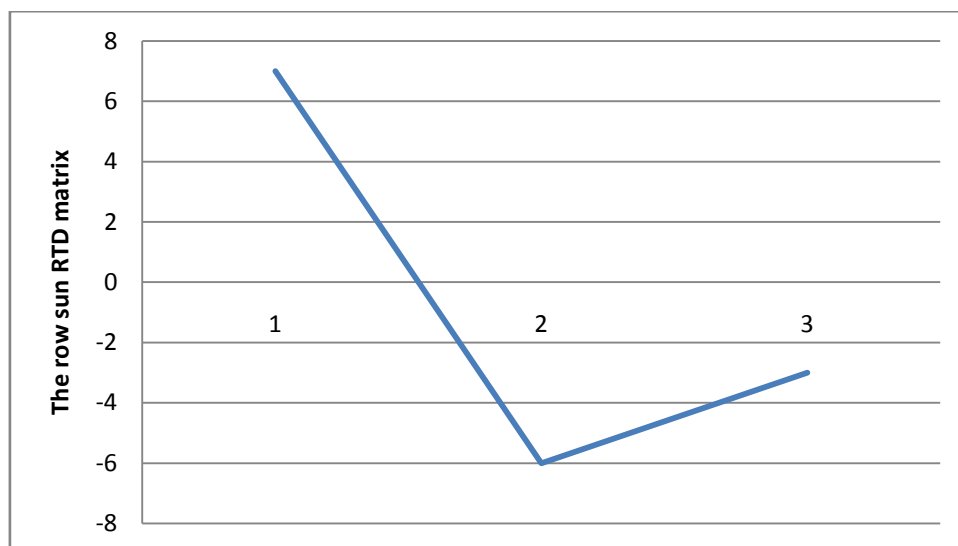


Figure 2 : Maximum age group gets divorce $\alpha = 0.45$

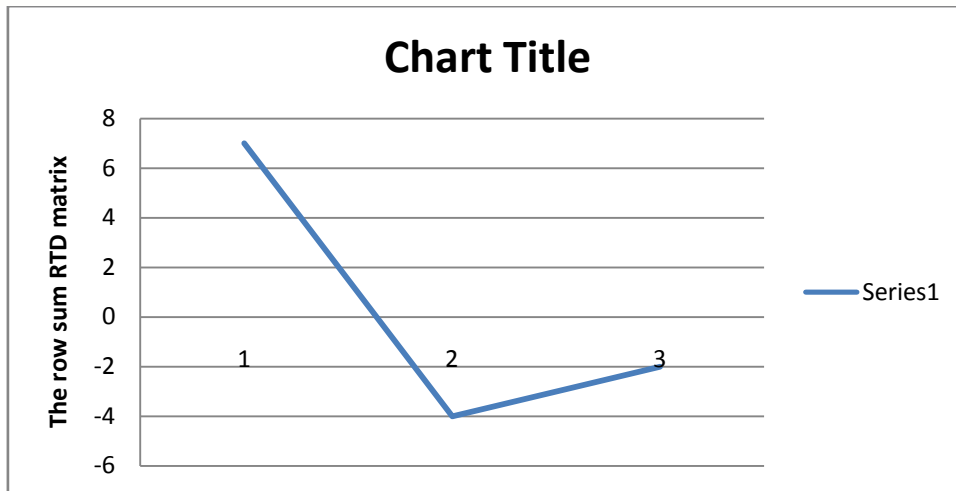


Figure 3 : Maximum age group gets divorce $\alpha = 0.65$

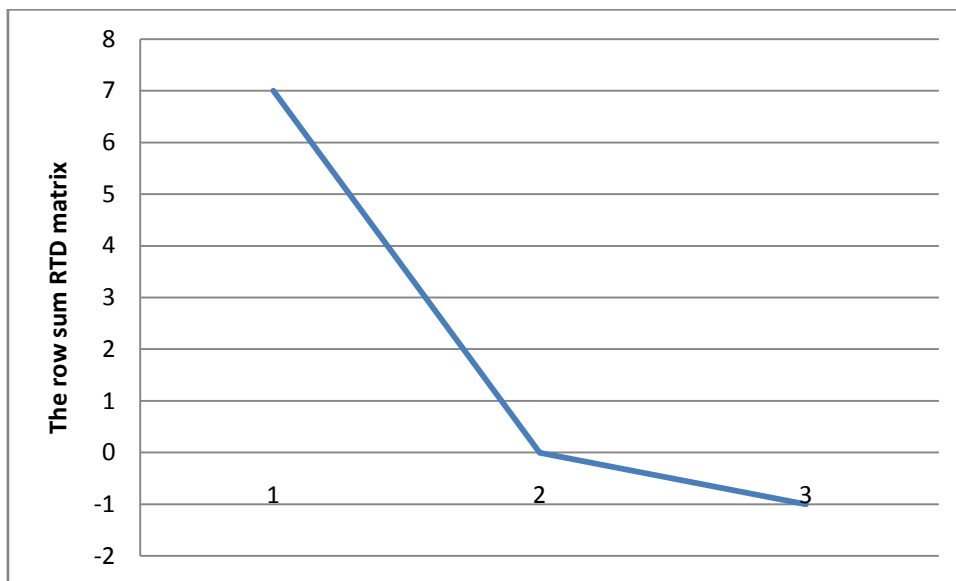


Figure 4 : Maximum age group gets divorce $\alpha = 0.75$

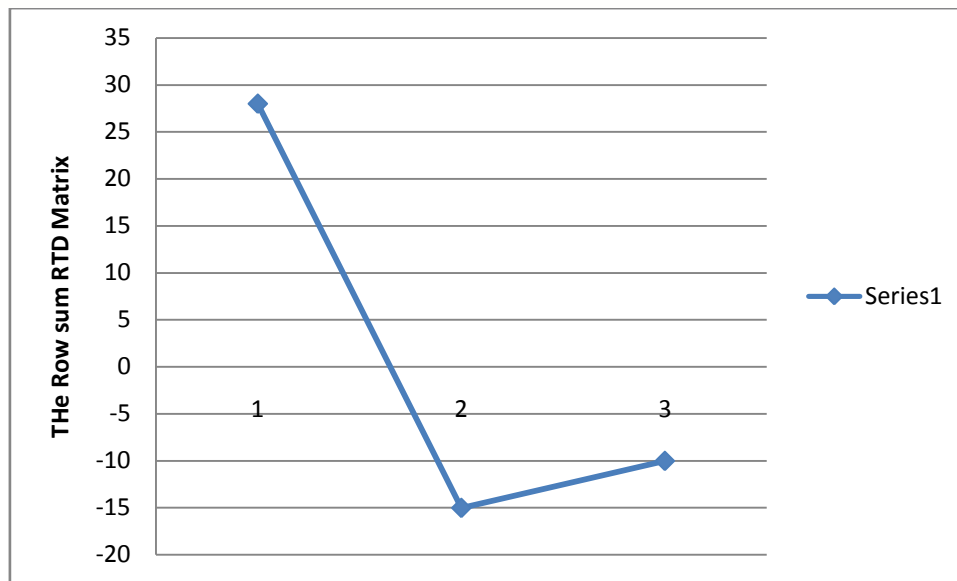


Figure 5 : Maximum age group gets divorce using CETD Matrix

In The above graph we observe that divorce start at the age of 26. The peak age of people having divorce is 29. The peak period is 21-32

V CONCLUSION

Divorce is one of the hardest things a family can go through. Many studies and researches have come forward to discuss this social phenomenon. From the above analysis, divorce starts at the age of 26. The peak age of people having divorce is 29. Hence, analysis with CETD matrix, result gets confirmed. It is suggested that ,if the married couples undertake the following qualities they can overcome any issues in their life and can avoid of divorce, the qualities are Loving un-conditionally, Caring and Trusting each other, Complimenting and respecting each other, Listen to your partner, stay positive, Be flexible, Keep up appearances, Practice healthy communication, Balance your time.

REFERENCES

- [1] Vasantha Kandasamy. W.B, Elumalai, Victor Devadass and Mary John “*Application of CETD Matrix Technique to study the Social and Psychological problems faced by RAG pickers* (2007).
- [2] P.R.Amato, People’s Reasons for Divorcing: Gender, Social Class, the Life Course, and Adjustment, *Journal of Family Issues*, 24(5), 2003,pp.602-626.
- [3] A-M.Ambert,DIVORCE: Facts, Causes & Consequences, Contemporary famil trends, publ. by *The Vanier Institute of the Family*, Third Edition, 2009.
- [4] J.M.Gottman, *What predicts divorce?* Hillsdale, NJ. Publ. by Lawrence Erlbaum Associates, 1994.
- [5] I.Wolcott, J.Hughes, Towards Understanding the Reasons for Divorce, *Australian Institute of Family Studies*,1999.
- [6] R.Sumathi and J.Jayalakshmi, A study on Facts, Causes and Consequences of Divorce Using Fuzzy Cognitive Maps.Vol. 2 ,2013.
- [7] Mr.A.Parthasarathy, Judge of Principal family court, Karnataka high court.