A View on Identifying Which Age Group of People Getting Affected Due Consumption of Soft Drinks Using Fuzzy CETD Matrix

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ABSTRACT

In the study we find out the maximum age group of people who are having chances to be affected by various diseases due to soft drinks using fuzzy CETD (combine effective time dependend data) matrix and some useful suggestion and conclusion are provided. A survey was made among 250 persons various age groups of peoples in erode district.

1. INTRODUCTION

In mathematics, fuzzy sets are sets whose elements have degree of membership. Fuzzy sets were introduced by Lofty A. Zadeh [4] (1965) as a means of representing mathematically any imprecise (or) vague system of information in the real world and for the purpose of developing expert systems and soft computing. To describe situations mathematically which are vague or fuzzy in nature Zadeh [7], introduced the theory of fuzzy sets. Fuzzy relations and fuzzy relational equations have important applications in pattern classification, clustering, fuzzy information retrieval, preference and so on. In system models based on fuzzy sets, one often uses fuzzy matrices to define fuzzy relations. "A fuzzy matrix is a matrix with elements having values in the fuzzy interval". In 1998, Fuzzy matrix theory was developed by Vasantha [6] and Indira [6] to study the passenger transportation. The authors divided and defined four types of matrices are called Initial Raw Data Matrix, Average Time Dependent Data matrix (ATD Matrix), Refined Time Dependent Data matrix (RTD Matrix) and Combined Effective Time Dependent Data Matrix (CETD Matrix) to study the problem. In the year 2007, the same technique was used by Kandasamy, Elumalai [6] to study the Social and Psychological problems faced by RAG pickers. In 2008, Devadoss [6] to estimate the maximum age group of the Bhutanese having conjunctivitis problem using this model.

According to government estimates soft drinks marketed in India were 6540 million bottles in March 2001. The market growth rate, which was around 2-3% in 1980s, increased to 5- 6% in the early 1990s and is presently 7-8% per annum. Most of the sales of soft drinks take place during summers while just 5-6% of total sales take place in winters. In summers the high season lasts for 70-75 days, which contributes more than 50% of the total yearly sales. Non-alcoholic beverage market can be divided into fruit drinks and soft drinks. account for nearly 61-62% of the total soft drinks market in India. In India, during September 2006, soft drink was accused by the Center for Science and Environment (CSE) of selling products containing pesticide residues. Soft drink products sold in and around the Indian National capital region contained a hazardous pesticide residue. These pesticides included chemicals which could cause many diseases.

2. FUZZY LOGIC AND FUZZY SET

Fuzzy logic is a superset of conventional (Boolean) logic that has been extended to handle the concept of partial truth values between "completely true" and "completely false".As its name suggests, it is the logic

underlying modes of reasoning which are approximate rather than exact. The importance of fuzzy logic derives from the react that most modes of human reasoning and especially common sense reasoning are approximate in nature. In this chapter, we discussed about whether a people having a chances to be affected by various diseases for the habit of drinking soft drinks. This project work is based on a surveys carried out in Omalur, Salem District. The data have been tabulated based on the details obtained from a doctor. Also we discussed about the impacts of chemicals in soft drinks, algorithm of Fuzzy CETD matrix, study area and we adapt the Fuzzy CETD matrix to the problem. Finally the conclusion and suggestions are based on our study are given.

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3. ALGORITHM

Ages in years	No. of people in this categories	No. of times the people who are consuming soft drinks per month
5-10	35	3
11-15	35	5
16-18	45	15
19-22	35	7
19-22	30	4
28-30	35	10
31-36	35	5

In the first stage, give a matrix representations of the raw data. The initial M x N matrix is not uniform. That is, take the data as it is and transform into a raw time dependent data matrix by taking along the rows

the ages in years drinking Soft drinks and along the columns the different categories like asthma, cancer, obesity, etc.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 matrix (ATD matrix). This is done by dividing each entry of the raw data matrix by the number of ages in years, that is, the difference of the class interval of each row. This matrix represents a data, which is totally uniform.
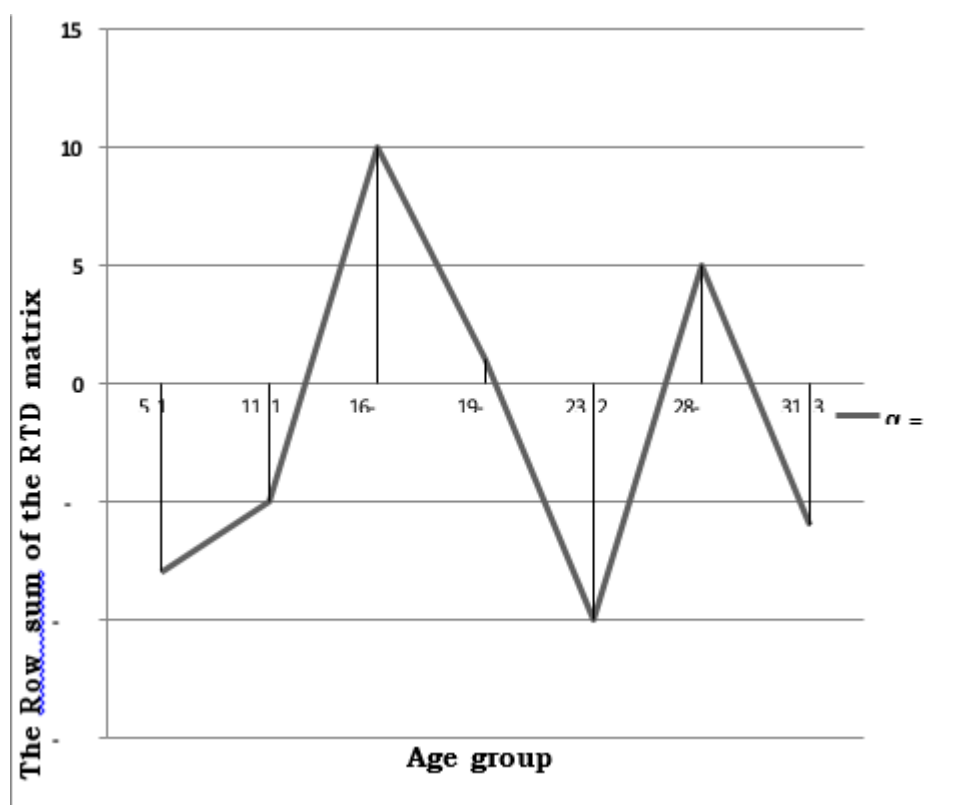
In the third stage, use the simple average techniques, to convert the above time dependent data matrix into a matrix with entries e_{ij} where $e_{ij} \in \{-1, 0, 1\}$. That is, find the average and standard deviation of every column in the ATD matrix. Using the average μ_j of each jth column and standard deviation σ_j of each jth column thus choose a parameter $\square$ from the interval [0,1] and name this matrix as the Refined Time Dependent Data matrix (RTD matrix). Thus determine the value of the entry eij in the RTD matrix

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
5-10	0.83	0	0	3.33	4.17	1.67	1.17	2.83	3.67	5
11-15	1.6	1.2	0.4	3.6	4	5	2.4	3.8	4.6	5.6
16-18	6.67	9	12.67	15	10.67	10.33	12	4	5	12.33
19-22	5.5	7.5	5	5.75	3.75	4.5	5.25	4	4.25	6.5
23-27	3.4	3	3.6	5.6	2	4	2.6	0	1.6	4.4
28-30	4	6.67	10	8	6	6.33	4.67	0	3.33	10.67
31-36	4.17	1.17	3	3.5	2	2.83	3.33	1	5	5.5

Table: ATD Matrix

Thus, for different values of α, some of the Refined Time Dependent fuzzy matrices can be obtained. The purpose of introducing the Refined Time Dependent fuzzy matrix is to minimize the time involved in performing the simple arithmetic calculations and operation on the matrix. For this matrix the entries are –1, 0 or 1. This is Acesulfame Potassium, which is 150 times sweeter than sugar, and it aggravates the heart, vascular system, and nervous system. It is especially bad for children and pregnant women. This causes irregular heartbeat, cancer, birth defects and breast lumps. Sodium cyclamate - It's risky to male reproductive health due to infertility issues and testicles problem. This substance is table sugar. With high consumption, it causes diabetes, heart disease, hyper tension and mood swings. Lindane is a potent carcinogen. It damage human liver, kidney, neural and immune systems. According to government estimates soft drinks marketed in India were 6540 million bottles in March 2001. The market growth rate, which was around 2-3% in 1980s, increased to 5- 6% in the early 1990s and is presently 7-8% per annum. Most of the sales of soft drinks take place during summers while just 5-6% of total sales take place in winters. In summers the high season lasts for 70-75 days, which contributes more than 50% of the total yearly sales. Non-alcoholic beverage market can be divided into fruit drinks and soft drinks.

Result Graph

CONCLUSION

Many people suffer from various diseases, one of the most reason is the habit of drinking soft drinks. The conclusion for our study is based on the analysis of the above results. From the above graph, it is observed that the maximum amount of soft drinks consumed by people whose ages between 16 years and 18 years. These age group people having more chances to be affected by various diseases. Because these age group people consuming the high level of soft drinks.

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