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Markovian prediction of future values for food grains in the economic survey

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Abstract. Now-a-days prediction and forecasting play a vital role in research. For prediction, regression is used to predict the future value and current value on the production process. In this paper, we assume food grain production exhibit Markov chain dependency and time homogeneity. The economic generative performance evaluation the balance time artificial fertilization different level in Estrus detection using a daily Markov chain model. Finally, Markov process prediction gives better performance compared with a Regression model.

1. Introduction

A lot of interest in time series analysis data to estimate the future value using Markov chain process. The economic survey which is statistical analysis data in using Markov chain process. Markov chain operator it will be the production percentage known about future value in data analysis. Data mining and its applications have more attention in recent year, this paper showed production percentage on using Markov chain process through cost of living index number. The main contribution of this paper is the approach the predict future value and current value on production percentage through cost of living index number using Markov chain process. We observe meaning and need based on the customer price index number to denote the ordinary change over the time in the making supplier buy the consumer of a specified on food grains in up-to-date and forthcoming trend.

2. Review of literature

Zhang and Zhang [2] also improved a stochastic store price forecasting model using Markov chain process. Bulla by [2] has reached into the application in stochastic process probability to a specific purpose. Building on existing literature. Ramsay.J.Function and data analysis in Markov process [8].

We assume food grains production exhibits Markov chain dependency and time homogeneity and we specify a three-state Markov chain process. (i.e. production decrease, no change and production increase) the methodology for determining the mean return time for equality production increases and their respecting limit distributions using the generated state-transition matrices.

Wayne schoessor Markov chain Monte-Carlo model to evaluate the time value of historical testing information in the animal population [12]. Ying-Huachang, Ming-Sheng Lee. Incorporating Markov chain process on genetic algorithms to develop trading strategies for stock markets [11]. The arrival of low-interest rate, Investors move into the stock market to seek higher returns however, the stock market proved volatile, and only one rarely could investors gain excess return when trading in real time.



J.O.Giordano, A.S.Kalantari, P.M.Fricke. A daily herd Markov chain model to study the reproductive and economic impact of reproductive programs combining timed artificial insemination and estrus detection. Our objective was to compare the economic and reproductive performance of programs combining timed unnatural insemination (TAT) and different level of AI after estrus detection (ED) using a daily Markov chain model. Jin-Longwang. Markov chain supported dependability components parts for spread out systems [5].The transition probability to occur from one state to another state in a unity of time for the independent time of Markov chain process in the separate level. Yong-Huachang, Ming-Shenglee. Markov chain decision process on genetic [13].

3 Method and Discussion

MARKOV CHAIN

The change of production the next day present on today on previous production status only follow whether it is not production current year production and not past year production. It will be a future production with probability 'α'. If it does not consider current year production and the future production accompanies the chance If we say the procedure is starting point '0' what time to consider express 'I' what time doesn't produce and then the above is a being one more than one state Markov chain whose changeover probability is given by

$$P = \begin{vmatrix} \alpha & 1-\alpha \\ \beta & 1-\beta \end{vmatrix}$$

ASSUMPTION AND MODELS

P=symbol zero and one

We source the number of symbol zero and one in a communicative organization which alteration the digit zero and one. Every symbol express must follow the probability of the position 'p' which symbol move into unchanged when it is not there.

Letting X_n indication the digit entering the n^{th} stage. Then, $n=0, 1, 2 \dots$ is a being one more than one state Markov chain having a changeover probability matrix

$$P = \begin{vmatrix} P & 1-P \\ 1-P & P \end{vmatrix}$$

The completed state X_0, X_1, \dots, X_n depends on future states X_{n+1} regarding conditional distribution the Markova chain process is present values depends upon the past values X_n .

4 Conditional probability of Markov chain process

Corollary (RANDOMLY SUPPLIER)

Food grain production in India which state consist the place corners S_1, S_2, S_3 and S_4 At suitable time '0' the depending on chance distributor stands in place area S_1 At time 1, he supplies a food grain then provides without delay in the direction of S_2 (or) S_4 as reported to whether production percentage uses by people it will be in future, past and present trend, supplier provides the food grain to decide which of the state to move to With decision rule that. Food grain uses by the consumer it will become up level increase production percentage so that supplier provide next state. Food grain uses by next state consumer it will supply counter clockwise procedure.

The Indian third advance evaluation in the food grain production increases 252.23 million in the year of 2015-16 years. The shortage of water in the tank due to defective rainfall. (Mdahvi sally, ET Bureau May 9, 2016).

5 Random supplier India

A random supplier in India for each 'n' let X_n denotes the index of the supplied path in state level. At which supplier stands at the time n . Hence (X_0, X_1, \dots) is randomly process taking the values in the Supplier starts at time 0 in S_1 we have $P(X_0 = 1) = 1$ next, supplier S_2 to S_4 move with each by using conditional probability $P(X_1 = 1) = 1/2$ and $P(X_1 = 4) = 1/4$

S1 =Madhya Pradesh

S2=Maharashtra

S3=Rajasthan

S4=Gujarat

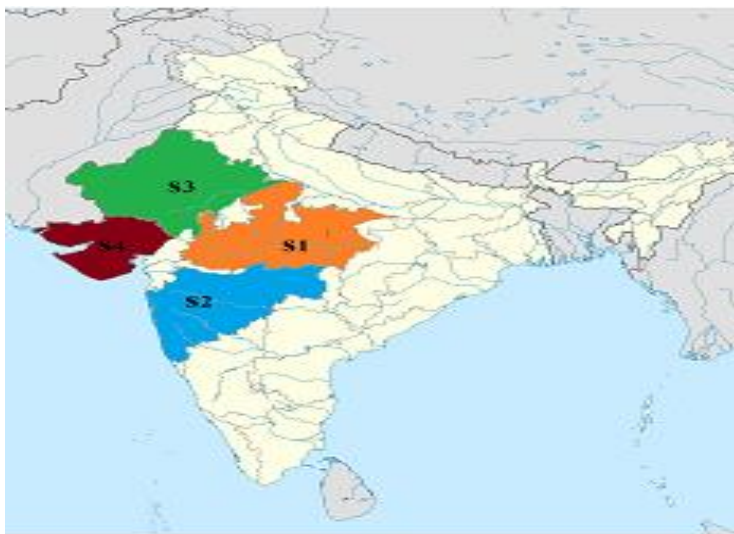


Figure - 1

6 Process in conditional probabilities

The practical conditional probability in the distribution of for X_n $n \geq 2$. At time 'n'.

Supplier stands at S_2 then we get conditional probabilities

$P((X_{n+1} = S_1) / X_n = S_2) = 1/2$ And $P((X_{n+1} = S_3) / X_n = S_3) = 1/2$ the process of time

'n' $P(X_{n+1} = S_1) X_0 = i_0, X_1 = i_1, \dots, P(X_{n-1} = i_{n-1}, X_n = S_2) = 1/2$

And

$P(X_{n+1} = S_3) X_0 = i_0, X_1 = i_1, \dots, P(X_{n-1} = i_{n-1}, X_n = S_2) = 1/2$

Any creations for food grains i_0, \dots, i_{n-1} . The period $n+1$ is independent of all values preceding supplier production percentage uses by the consumer. The independent of (X_0, \dots, X_n) Known as Markov chain property. The qualified distribution X_{n+1} given (X_0, \dots, X_n) depends only on 'Tomorrow' (time $n+1$), 'Today' (time n), as the 'Past' (time $0, \dots, n-1$).

7 Procedure

The predict future value to known about time series. Which represent

1. Long-term series

2. Short-term series

The essential study distinctly the correlation between Long-term changes and Short-term changes.

8 Cost of living index number

Meaning and Need

In the calculate day to day of living index number are normally propose to characterize the average modification over the time in the prices paid by the customer of a specified basket of goods and services. The changes in the general production level on the cost of living different class of people in different manners. The sixth international conference of labour statistical held in Geneva suggested that the period of enquiry of the family budgets. So that from the information we observed production level which is dependent on different consumer manner.

APPLICATIONS

Table 1. Day to day living index number

Expression on	Food	Rent	Clothing	Fuel	Misc
Production percentage	40%	10%	15%	20%	23%
Price(2014) Rs.	100	60	70	50	40
Price (2015) Rs.	70	65	75	40	35

What changes in the cost of living figure of 2015 have taken place compared to 2014 from the above data we get solutions.

9 Construct the cost of living index number (Applications)

Table 2

Expression On	2014 (p_0)	2015 (p_1)	$(p_1)/(p_0) \times 100$	W%	PW%
Food	100	70	70	40%	2,800
Rent	60	65	108.3	10%	1,083
Clothing	70	75	107.1	15%	1,606.5
Fuel	50	40	80	20%	1,600
Misc	40	35	87.5	23%	2012.5

$$\sum w = 108, \quad \sum Pw = 9,102$$

$$\begin{aligned} \text{Cost of living index number} &= \frac{\sum Pw}{\sum w} \\ &= 84.2\% \end{aligned}$$

As compared to 2014 the cost of living index number has risen by 84.2% in 2015.

From the above concept, we observed the estimate the future value using Markov chain

process-based on the cost of living index number.

10 The union budget of economic survey in India (Applications)

FOOD GRAIN	Production India percent share (p_0)	Cumulative percent share of production (p_1)	$(p_1)/(p_0) \times 100$ P	(W) Current rate from(FAO)	P %	W %	PW %
Rice	36.7%	76.4%	208.1%	35%(FAO)	208.1%	35%	7,283.5
Wheat	62%	136.5%	220.16%	25%(UFM)	220.16%	25%	5,504
Maize	43.7%	96%	219.6%	40%	219.6%	40%	8,784
(oilseed) Groundnut	63.2% (IOPEPC)	146.5%	231.8%	22%(IGE)	231.8%	22%	5099.6
Soybean	93.1%	237.4%	254.9%	38%	254.9%	38%	9686.2
(crops) sugarcane	73%	172.8%	236.7%	62%	236.7%	62%	14,675.4

Table 3. Economic survey in India

In the given following the budget of middle-class families in India.

$$\sum w = 222\% \quad \text{and} \quad \sum Pw = 51,032.7\%$$

$$\text{Cost of living index number} = \frac{\sum Pw}{\sum w}$$

$$= 229.87\%$$

FAO = Food and Agricultural Organizations

UFM = Union Food Ministry

IOPEPC = Indian oilseeds and produce export promotion councils

IGE = India groundnut export

Production of rice, coarse cereals, oilseeds, sugarcane, lowers due to erratic rainfall during in 2015 monsoon season.

“As per the advance prediction for 2015-2016 total food grain production in a century has been higher than that in the last year. Total foodgrains production during 2015-2016, exact predicted at 252.23 million tonnes, back-number more than by 0.21 million tonnes above the yield of 252.02 million tonnes during 2014-15.

Rice production during 2015-2016 is estimated at 103.36 million tonnes, which is lower by 2.12 million tonnes than its production of 105.48 million tonnes period in the year 2014-2015. With a decline of 1.6 million tonnes over the previous year's production total oilseeds production in the country during 2015-16 is estimated at 25.9 million tonnes. Production of sugarcane estimated at 346.72 million tonnes is below by 15.61 million tonnes than its production during 2014-15. From the above prediction level, we have predicted the future values in food grain in the economic survey. Such values are using past values depend on the present values.

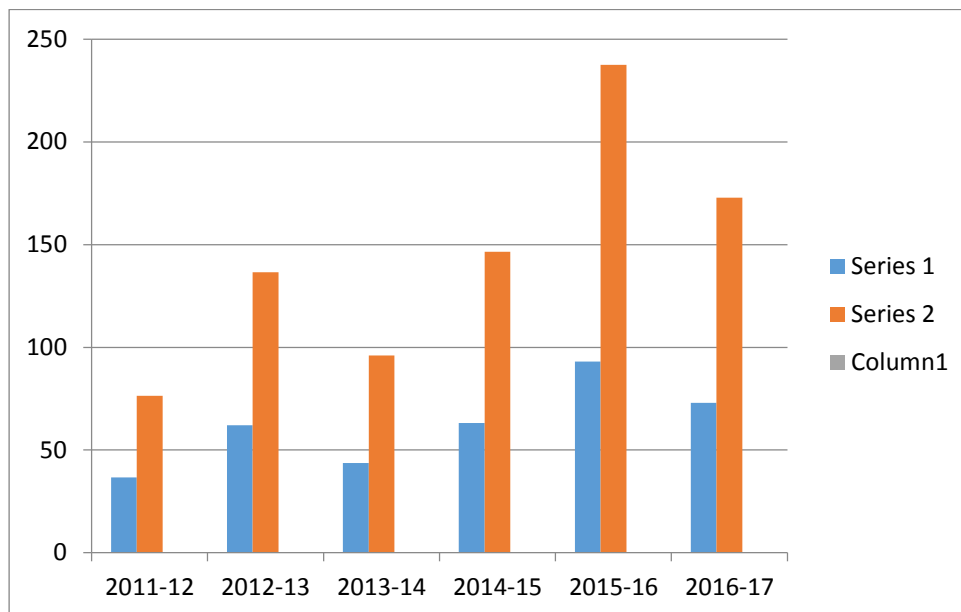


Fig - 2 Food grain production level

As compared to 2015 the cost of living index number has risen by 229.87% in 2016. We expected the future value production level 2017, 2018.....and so on such that from the present values based on past values by using Markov chain process.

11 Conclusion

The contributions of this paper to necessary the predict the future value require food grains for people. People survive to need food grains in the day to day life. People expected peaceful and healthy life to live in the world. So that prevention is better to equalize food grain production level present value based on past value. To know about the past value it utilizes in the Economic survey which is getting on 2017, 2018

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