

World is Statistical

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Lesson to be drawn

- The Conception that the phenomenal world is statistical (stochastic or probabilistic), will help us well in empirical work that social science research engages in.
- In fact, all worldly phenomena, in whatever discipline or in whatever manner studied, have an element of chance.
- (This statement is not statistical!).

Lecture Plan

- # Fear factor
 - # Cricketaria and Electioneria
 - # Some Exercises
 - # Nature of World
 - # World of Nature
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Do you fear?

- # Why?
 - # Do you think you haven't learnt any Statistics?
 - # If you say yes, it is not true!
 - # Not only we have learnt some Statistics but actually we use a lot of Statistics practically everyday.
 - # Yet most people fear.
 - # Is fear good?
 - # It is good that some of us fear and they turn to 'better' things! For example, Prem Chand
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Statistics and Cricket

- # Did it generate interest in statistical techniques?
Have we learnt some statistics?
 - # Run Rate: Run rate achieved at the end of nth over, run rate required to win the match
 - # Comparison of Cumulative Team Scores
 - # Cumulative total, Final cumulative total is the Total
 - # Scenario projection, at current rate, possible rates
 - # Add...
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Learning from Statistics

$$n_1x_1 + n_2x_2 = (n_1 + n_2)x$$

or

$$x = (n_1x_1 + n_2x_2) / (n_1 + n_2)$$

where

How many of you liked it?

Does it mean there is some defect in our teaching rather than in our learning?

Election Result

- # Vote Percentage= X
 - # Seats won= Y
 - # Is there any relationship between X and Y ?
 - # Yes or No
 - # Positive or Negative
 - # Perfect relationship?
 - # Is this relationship like $C=2\pi r$ or $A= \pi r^2$?
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Correct these sentences, if not right

- ❑ Most often and in most places we find that sum of three angles of a triangle on the Cartesian plane is 180° .
- ❑ All women pack twice the number of dresses they happen to use during pleasure trips.
- ❑ Every (wo)man everywhere takes a week of window-shopping before choosing a dress.
- ❑ Each family which earns Rs.10000, spends Rs.8000 on food.
- ❑ Usually we find that $2+3=5$.
- ❑ Normally, Sun rises in the East.
- ❑ Everybody who smokes gets cancer.
- ❑ Normally the probability density of a normal curve at mean value is $1/\sqrt{2\pi}$
- ❑ Today Sun rose in the West!

Some More Exercises

- # Spouses always/regularly/invariably/most often/sometimes/scarcely/ rarely/hardly/ never/never ever cause greater stress than the bosses.
- # With black clouds, rain is certain/quite certain.
- # Recession in real economy must follow meltdown in financial market.
- # Very often $\text{Sin}^2\theta + \text{Cos}^2\theta = 1$
- # Whosoever gets 12% votes will win an assembly election.
- # In a two-candidate contest in an electorate of n size, the winner will have at least m votes where $m \geq n/2$.
- # Earth moves round the sun.
- # Plants defy the of law of gravity.
- # Father's sister is normally a bua.



Look for Times Trends



WHAT DO WE FIND IN PHENOMENAL STATEMENTS

- # Do we see in the ‘frequency’ adverbs in many statements, in a sense of probability?
 - # Does high/low probability mean certain occurrence/non-occurrence?
 - # Sun rises in the East is a statement of a phenomenon (?)
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GEETA AND STATISTICS

- # Shlokas 14, 15, 16 of XVIII Chapter: five factors for the result of an action:
 - Adhishthanam: purpose
 - Karta: Doer, Actor
 - Karanam: Raw Material, Capital
 - Endeavours: Labour, Management, Enterprise
 - Daivam: Probability, Chance, Luck
 - # Who is the doer: I or HE?
-

Nature of World

- # Mathematical? Every result is predetermined, fixed
 - # Statistical? Depends!
 - # What is the difference between the two?
 - # Real Nature/Real World: Noumenal or Phenomenal;
 - # But 'statistics' is mathematical! Nature of chi-square curve is fixed
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Bet, Surprise!

- # When do you bet?
 - # When are you surprised?
 - # When you were/were not thinking that to happen, to be least likely?
 - # Were you ever surprised to find $\text{Sin}^2\theta + \text{Cos}^2\theta = 1$?
 - # Meteorology and biology; physics and sociology;..
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World of Nature

- # Are you absolutely certain about yes and no?
 - # Or you think you are quite certain, not very certain, quite likely or, hyperbolically speaking, 125% certain!
 - # 'Very unlikely' Can happen! Very likely may not happen! Dial/hand experiment
 - # Most probably it would happen or scarce chance it won't happen.
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Uses of Statistics for Policy Makers/ Administrators/Researchers

- # Idea of dimension of the problem
 - # Specification of Quantitative relationship
 - # Hypothesis testing: choosing between alternative theories
 - # Estimation
 - # Forecasting
 - # Policy analysis
 - # Implementation or
 - # Knowledge of probability of a phenomena or event or both
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THANKS