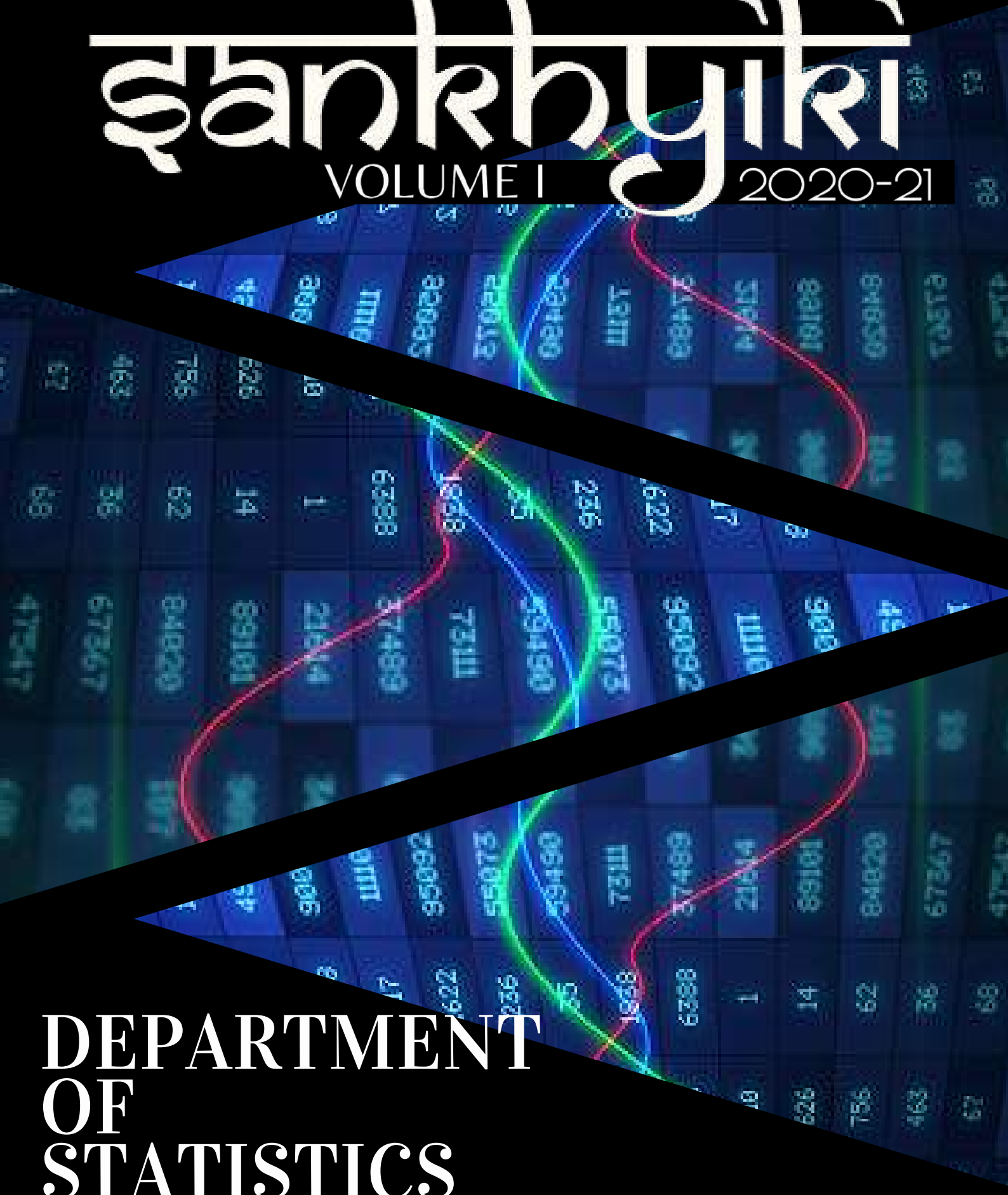
MATA SUNDRI COLLEGE FOR WOMEN

UNIVERSITY OF DELHI

sankhyiki

VOLUME I 2020-21



DEPARTMENT OF STATISTICS

Mata Sundri Ji

Mata Sundri Ji was an exemplary leader, a powerful personality, a researcher, a loyal Sikh and an inspiration for generations to come. She was the wife of 10th Sikh master, Guru Gobind Singh Ji. She was born in the year 1667, to Bhai Ram Saran, in Hoshiarpur, present day Punjab. She was married to Guru Gobind Singh Ji on 4th April 1684 at Anandpur Sahib. She gave birth to Baba Ajit Singh ji, the eldest son of Guru Gobind Singh Ji. She was an excellent mother and always taught her son to fight against injustice and help underprivileged people. After the demise of Guru Gobind Singh Ji, she took the command of Khalsa Panth and showcased her brilliant leadership skills. She preached Sikh values among the masses and asked people to lead an honest and a virtuous life. She also issued hukumnamas to sangats under her own seal and authority. She ensured that the tradition of 'langar' (free community kitchen) continued to flourish. Gurudwara Mata Sundri Ji is the historical holy shrine raised in memory of Mata Ji where she lived for about forty years. The renowned institution- Mata Sundri College for Women established in 1967 is an ode to her immense sacrifices and contribution in the field of humanity, peace and truth. The institution is a blend of people pertaining from various cultures, regions and religions adding to the beauty and diversity of the institution. Their experience, knowledge, views and opinions add to the charm and uniqueness of the institution. The institution is growing and flourishing with each passing day, which is possible only due to the blessings of Mata Sundri Ji.

She is an inspiration for all those who are struggling for justice, equality, sovereignty and liberty.

We bow our heads as a mark of respect before the greatness of her soul.

From Principal's Desk

Dear young friends

I extend my heartiest wishes to the Department of Statistics for coming up with the 1st edition of their e-magazine 'SANKHYIKI'. The magazine gives an insight into the range and scope of the imagination, talent and creativity of our students and faculty members.

It is a platform for our students to showcase and portray their creative abilities, unexplored skills and aspirations for writing.

The themes, genres and subjects chosen in the edition are diverse and unique. The linguistic diversity of the magazine is also to be appreciated and applauded. I would like to congratulate the editorial team for the hardwork and dedication they have invested in realising this goal. I would also like to congratulate the faculty team for diligently guiding the students.

I wish my dear students success in all future accomplishments.

Prof. (Dr.) Harpreet Kaur
PRINCIPAL

From Teacher In-Charge Desk

I am privileged to write this introductory note for Sankhyiki, the First edition of the annual e-magazine of the Department of Statistics, Mata Sundri College for Women, University of Delhi. We are fortunate to have excellent faculty and very brilliant students in the Department who have all joined hands to bring out this publication. I greatly appreciate the efforts and the hard work put in by all of them in designing this publication and in contributing to its very interesting and thought provoking contents. I am sure all the readers, both from Statistics and non-Statistics background, would find the readings stimulating and engrossing.

Bringing out this First edition of Sankhyiki was particularly challenging this year due to Covid 19 situation and the attendant constraints on having face to face interactions and brain storming sessions between faculty and students. Despite all these constraints I am very happy to see the final product which in my view is much above my expectation. I congratulate all my faculty and students for this excellent work.

It would be pertinent to mention that during the current year the Department organised several academic activities. In addition a number of inter-disciplinary mentorship programs were organised by the students of our Department and these programs were much appreciated and applauded by both students and teachers.

An outstanding achievement of our Department this year that needs to be specifically highlighted is that our final year student Mansi Jaiswal scored First rank and topped Delhi University. Many congratulations to Mansi. I am sure in years to come we will have many more students who will bring such laurels to our Department and to our College.

Wishing all a very happy reading.

Ms. Prabhsharan Kaur
Teacher-In-Charge

From Chief Editor's Desk

Statistical thinking will one day be as necessary a qualification for efficient citizenship as the ability to read and write. *Herbert George "H. G." Wells*

Statistics department is a new department in Mata Sundri College for Women. It's just our fourth year and only one batch has passed out. In such a short time we have come up with our own magazine !! It gives me immense pleasure to present to you all the First edition of Department of Statistics annual e-magazine 'Sankhyiki'.

There is general assumption that Statisticians are only good at numbers. But this is not the case. This magazine not only contains informative articles but also poems and artwork from the students as well as teachers. It also carries a vivid account of the activities, events and achievements of the department spread over the last academic session. The aim of the magazine is to provide a platform to our young, enthusiastic students to showcase their talent and creativity in the form of articles, artwork, poetry, designing and much more. You may find some of the articles a little basic ones… but then.. we must not forget that they are just students… who need shaping and encouragement. I hope you will enjoy reading it.

This issue is dedicated to all the students and teachers of the department who have put their efforts and made all the events successful throughout the session.

I would like to thank our Principal ma'am, Prof Harpreet Kaur, for providing us this opportunity to come up with our own department magazine. My heartfelt thanks to our teacher-in-charge, Mrs Prabhsharan Kaur for her constant support, guidance and encouragement throughout. I also want to thank my department teachers for their help and for contributing in the magazine.

As a chief editor, I take this opportunity to thank my editorial team who has worked tirelessly for successful completion of this issue of e-magazine.

I end with a quote by famous German mathematician and physicist Albert Einstein

Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.

Stay safe !! Stay Healthy !!

Dr Archana Verma

From Editor's Desk

Dear Readers,

I proudly present to you the First edition of Sankhyiki – the magazine of the Department of Statistics. In this issue, we are kicking things off by going through a timeline of events organised by 'Statistika', the Statistics Society, in the academic year 2020-21. From celebrating World Statistics Day to having multiple peer mentorship programs, this year has been highly eventful. Following the event reports are the articles and poems submitted by our esteemed teachers and students. The highlight is the spectacular and creative splash of ideas contributed by the students which includes all the drawings and artworks.

I'm happy to share with you that there is a section called Student Zone, which includes all the yearbook quotes and pictures, alumni notes, gaming centre etc. We are sure that a few years from now when you open this magazine it will surely leave you nostalgic of the times spent at the institution and will be a testimony of how well you all coped and stood with your peers during this difficult period of pandemic.

I have been lucky to have had a wonderful team of people with me who have contributed and helped in every step of the way and I couldn't thank them enough. The team has been my right hand in making this magazine successful. Alisha's remarkable creativity and invaluable suggestions have helped us through and through; Jessica, Mehak and Vanshika's work ethic, continuous zeal and enthusiasm are noteworthy. Without their contributions the magazine wouldn't have been close to where it is today. Davleen and Vrinda, are like a breath of fresh air. They have brought so much enthusiasm and a new outlook to how we can look at the things from a new perspective and I thank them for that. Gratitude towards each one of them for always being available and ready to work which has resulted in us having Sankhyiki in our hands today. I would also like to thank Archana Ma'am for giving me this chance to lead the magazine team and for her continuous support and guidance in all stages of compiling this magazine. Ma'am has always been patient with us and has pushed us to strive for the best. No amount of words can be enough to present our gratitude towards her. A special thanks to our Teacher In-Charge Ms. Prabhsharan Kaur and our Teacher Co-ordinator Dr. Swati Kujal for their support, love, and blessings.

Lastly, I would like to tell my juniors, the first and second years, all the best for your studies. Remember to explore yourself and find your calling. Do not let fear get in the way of your journey. And to my classmates, third years, I would like to say that it has been a while since we all saw each other, but the time spent in classes- offline and online, has been an absolute delight. All the best for the future endeavours. Keep in touch, stay safe and don't forget to go after what you truly love.

Have fun and enjoy going through this magazine. I would like to thank everyone who has given their entries. HAPPY READING. Au Revoir.

Sampada Kapur

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Our Faculty

2020-21

Dr. Swati Kujal
Teacher Coordinator

Dr. Komaldeep Kaur

Dr. Archana Verma

Ms. Prabhsharan Kaur
(Teacher In-charge)

Dr. Komal Goel

Dr. Kalpana Yadav

Dr. Meenu Goel

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2020-21

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Vanshika Bansal
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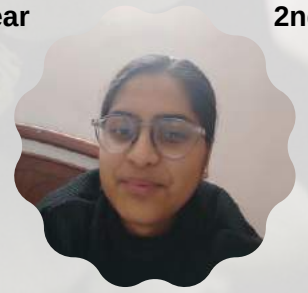

Davleen Kaur
1st Year

STUDENT HEADS
2020-21

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1st Year

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Alisha Manku
3rd Year

"When your actions inspire others to dream more, learn more, do more and become more, you are a Leader" ~John Q. Adams

I was always in it to win it and was fortunate to meet someone who helped me see things from a wider perspective. I am sure to reach great heights in all my endeavors. Grateful for the learnings and can proudly say that I still have miles to go before sleep!

Here's to a $uccessful future! Cheers!!

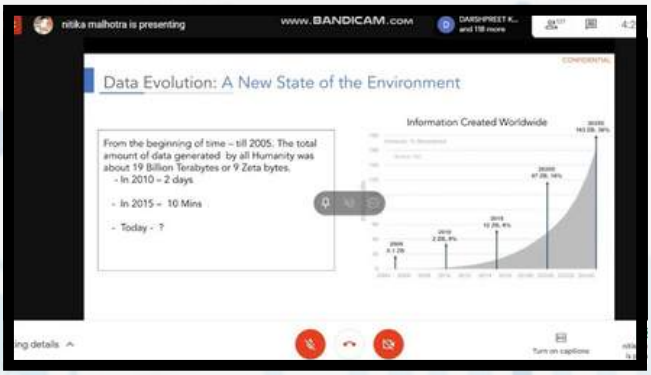
EVENTS

The best events aren't just memorable, they aren't just beautiful, they accomplish a goal.

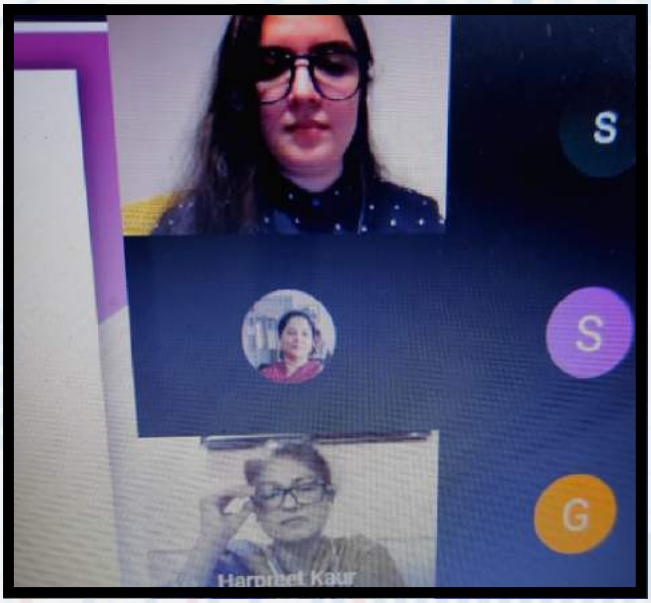
WEBINAR on DATA SCIENCE

The Department of Statistics, Mata Sundri College for Women organized a webinar on '*Data Science - Revolutionizing Business Decisions*' on October 8, 2020. It was the first-ever virtual event organized by the department. The resource person was Ms. Nitika Malhotra, a Data Science Manager, Ministry of Health, Singapore. The students from numerous courses and colleges attended the webinar. It was an enriching experience for the students.

The speaker discussed the dynamic nature of Statistics and how it has a scope that goes above and beyond just mere numbers. She discussed the presence of data science in various fields such as in healthcare and the music industry. She talked about her journey as a data scientist and being of a young age, the students and the teachers were thrilled to know her fresh outlook and perspectives on the subject. She also discussed how big companies use the data of their users and how data cleaning is one of the important aspects of data science. Towards the end of the webinar, she answered the queries of the students and guided them very patiently.



Listening to a young professional, talk about the workings of the industry awakened the students about how the real world works. The experience of the webinar was wonderful and the attendees appreciated the effort of the organizing team to conduct a webinar on such a relevant topic.



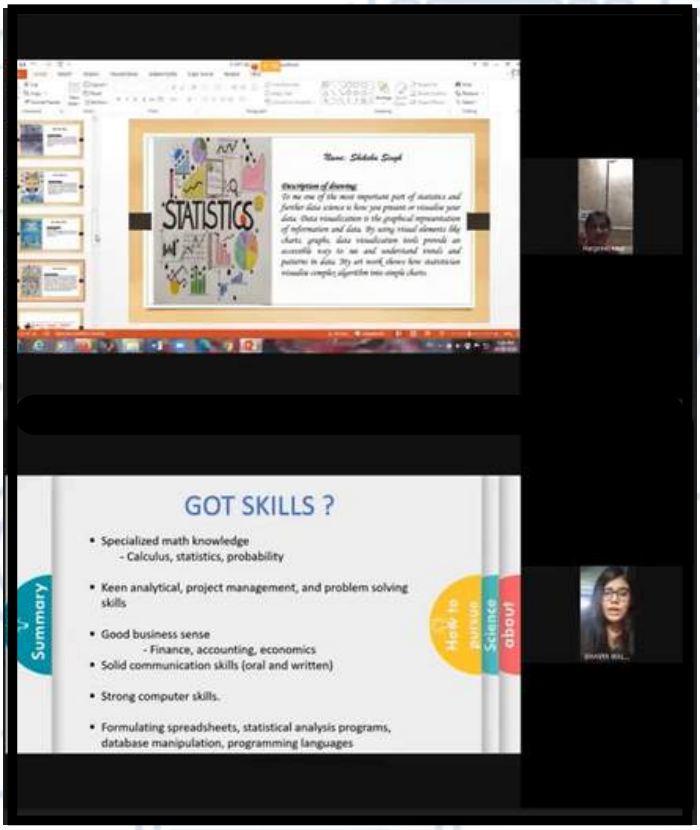
WORLD STATISTICS DAY

On the occasion of World Statistics Day, which was celebrated on 20 October 2020, the department organized a virtual event to celebrate this year's theme "Connecting the world with data we trust". It was a two hour event which was presided over by our respected principal ma'am, Prof. (Dr.) Harpreet Kaur, along with our esteemed teachers and the students of the department.

The programme included competitions, namely, 'Fusionistics' -The Art competition and 'Lights, Camera, Present' - The PowerPoint presentation competition. Also extempore speech, audience round, games and pantomime were played. The theme for "FUSIONISTICS" was to fuse Statistics in Art in which participants framed mesmerizing artworks showing perfect fusions of Statistics in every aspect of life and the theme for "Lights, Camera, Present" was Pervasive Statistics in which several students showed their amazing skills of public speaking and their understanding of the subjects. Principal ma'am and teachers conveyed their words of appreciation and wished a bright future to the participants and winners. Speaking on the occasion, they also said that aim of the World Statistics Day is to underline the importance of Statistics and highlight the role of the statisticians in the planning process at the national as well as international level.

The topics selected by students for presentation competition threw light on the importance of this occasion. They highlighted the importance of Statistics in national development and an altogether growth of the citizens. The artwork sent by students showed how Statistics can be viewed and appreciated in various phenomena of everyday life. The program was well concluded with a better understanding of Statistics among the audience so as to fulfil the whole objective of the event.

Everybody enjoyed this virtual event and highly appreciated the organizers. The event revealed many aspects regarding the knowledge of Statistics before the audience.

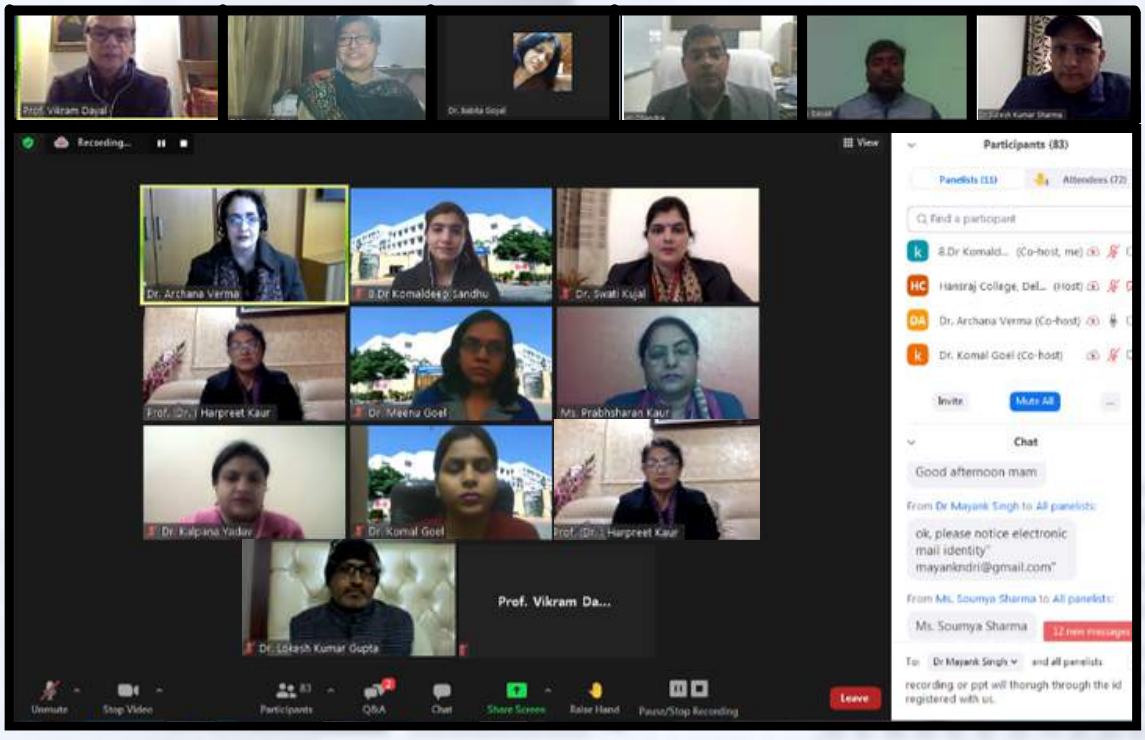


Faculty Development Programme (FDP)

The seven day Faculty Development Programme on '*Exploratory Data Analysis using Statistical Software R and SPSS*' was organized by Department of Statistics and Internal Quality Assurance Cell of Mata Sundri College for Women in collaboration with Mahatma Hansraj Faculty Development Centre, Hansraj College (initiative of MHRD, Govt of India under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching scheme) from 7th January 2021 to 13th January 2021. The programme was attended by around 150 participants from across the country and also abroad. The intellectually stimulating programme was enriching and proved to be helpful in improving analytical skills of the faculty and research scholars who attended the session.

Dr. Archana Verma, Faculty, Department of Statistics, Mata Sundri College for Women and Convenor of the Faculty Development Programme, welcomed all the participants. This was followed by a formal introduction by Mrs. Prabhsharan Kaur, teacher in-charge, Department of Statistics. Opening remarks for the event were given by our respected Principal Prof (Dr.) Harpreet Kaur. Dr. Lokesh Kumar Gupta, Coordinator IQAC gave a brief account of the activities being carried out in Mata Sundri College for Women during the Covid pandemic.

The programme progressed with different speakers from different backgrounds. The participants found it very engaging and gave an overwhelming response. The speaker addressed all the queries of participants patiently. In the end, there was a small valedictory session wherein Ms. Prabhsharan Kaur thanked all the organizing team members of both the colleges, speakers and the participants. Participants also shared their views regarding the course content of the FDP and gave a unanimous view that this one week FDP was very well organized and course content was immensely informative and enriching.



The inaugural lecture was given by Prof Vikram Dayal, Institute of Economic Growth in which he mainly focused on how visualization is critical to data analysis and how data graphics give us great insights about the data and how that can be done with ease in 'R'.

The resource person for the first session was Dr. Seema Gupta, Associate Professor, Ram Lal Anand College, Delhi University. Starting with the basic terminology of Statistics, she discussed types of data in research and the methods used for data analysis in qualitative and quantitative research. She explained Exploratory Data Analysis through various forms of graphs and how to interpret them.

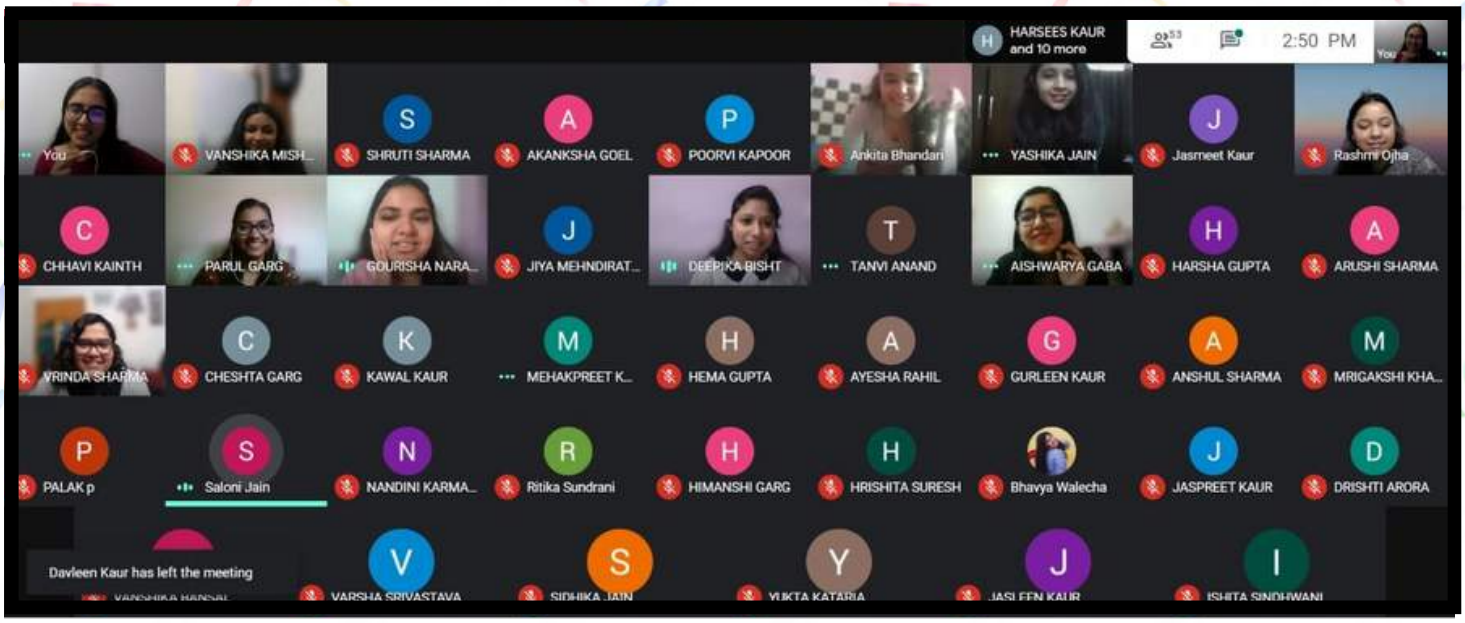
The lecture titled "Statistical Modeling and Model Diagnostics" was delivered by Dr. Babita Goyal, Associate Professor, Ramjas College, University of Delhi. She discussed that, raw data are merely numbers but they have great stories to tell if analyzed properly. She also discussed about the sources of data collection, variation in the data and designing part of the data and the results which were obtained from the analysis.

The sessions on R programming were conducted by Dr. Hukum Chandra, National Fellow & Principal Scientist, ICAR-IASRI. His sessions justified the immense popularity of R in academia. Since it was a hands-on session, the participants found it very engaging and gave an overwhelming response.

The session on multivariate analysis techniques using R software was taken up by Dr. Pradip Basak, Assistant Professor, Department of Agricultural Statistics, Uttar Banga Krishi Viswavidyalaya, West Bengal.

The sessions on SPSS were conducted by Dr. Suresh Kumar Sharma, Professor, Department of Statistics, Panjab University, Chandigarh. His sessions were engaging and imparted great conceptual clarity and knowledge to work in SPSS with ease.

FRESHERS 2020



The Department of Statistics organised "Asombrosa '21 Virtual Freshers" on 25 January, 2021. The senior students of the Statistics department welcomed their juniors with utmost excitement and energy.

The new batch was also fuelled up with fanaticism and vigour on entering a new chapter of their lives. The event kicked off with the oath taking ceremony by the new president, vice president, joint secretary and executive members of the department society.

Though the event was conducted online, the seniors and the juniors were quite excited and enthralled to welcome and greet new faces. A lot of preparation was done on both ends for the event.

The seniors were determined that the juniors enjoy the virtual freshers and relish every moment spent there. For this they toiled hard and prepared various dance performances and recordings. A special talent hunt was also organised for the freshers so that everyone could get an insight of the hidden talents in the bubbling batch. The audience hailed the distinguished talents of the participants.

Shortly afterwards the seniors circulated titles to each fresher as per their characteristics and interests which was again an exceptionally pleasurable moment. Indeed the students met some amazing batchmates and made some great memories altogether.

WOMEN'S DAY'21

A woman is an embodiment of affection, passion, care, dignity, confidence and courage.

To celebrate diverse forms of a woman, the students of Statistics Department of Mata Sundri College for Women celebrated Women's day on March 8, 2021. The event was hosted by Student Union of Statistics Department. The event started with the prayer in unison. Then, few enlightening words were spoken by our teacher-in-charge Mrs Prabhsharan Kaur Ma'am.

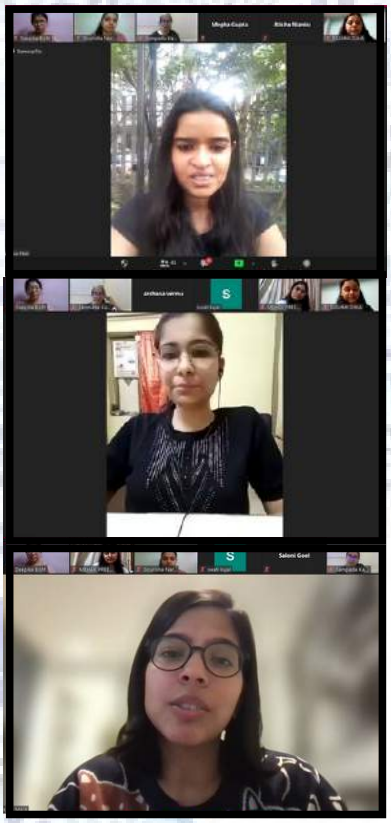
The first speaker of the event was Ms. Deeksha Malik, who is a data science director at Pomello Fashion. She enlightened and motivated the audience with her life story, her struggle behind the success. Her words reflected her years of experience, knowledge and hard work. She also shared the vast knowledge of e-commerce, data science and statistical modelling. The audience listened patiently and learned many new things. They also asked queries related to the topic. Followed by her talk, some interactive questions were asked from the department teachers by the hosts. All the teachers answered them in a great way. Some of them also shared their experience in teaching life. It was great to hear from them.

The next guest speaker was Mansi Jaiswal, alumni of Statistics Department. Topper of University of Delhi, Batch of 2020 of B.Sc. Statistics Honours. She talked about her experience as a student, how she overcame her failures and reached new heights. She motivated all her juniors and wished all the students best of luck. She also talked about her future goals and students asked their queries from her which she answered enthusiastically. Her presence definitely became a highlight of the event.

Next again it was a time for some amazing fun and this time it was a bit competitive. There was an Extempore Round hosted by the organizers. The topics for the round were displayed in the beginning and then randomly one topic was given to a student who had to speak about it within the time limit. There was an active participation by the students and winners were decided by the teachers and certificates were also provided for the same.

Next in line was Ms. Shutapa Paul, who was our final guest speaker of the day. Ms. Shutapa, is an entrepreneur who was awarded "Women of the Year in Media and Journalism" by Women Times in February 2019. She spoke about her life journey and how she achieved her personal as well as social goals despite all the struggles. Her words fuelled the crowd with different courage and optimism. At last, students asked her their queries and how can they become influencers or entrepreneurs. The event ended with a short game of Rapid Fire in which students had to answer quiz questions based on Bollywood movies and songs. They all answered zealously.

All applauded and enjoyed the whole event. A greeting card was also provided to each teacher as well as student of the Department via e-mail wishing them a very Happy Women's Day which took every recipient by surprise. Thus the event was well-enriching and was a mixture of motivation, enthusiasm and rejuvenation for everyone.



MENTORSHIPS

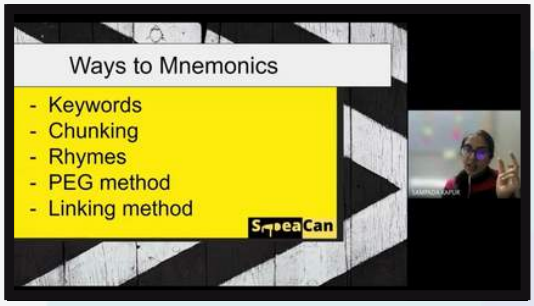
Mentoring is a brain to pick,
an ear to listen,
& a push into the
right direction.

SPEACAN MENTORSHIP PROGRAMME

SpeaCan completed an 8 day extensive course under the Mentorship Program with Mata Sundri College for Women under Department of Statistics and Internal Quality Assurance Cell [IQAC]. The course began on 2 November 2020. Having only a few number of students, the 8 classes were spread across two weeks and ended on 13 November 2020. Each session was approximately 2 hours long, where the mentors of Third year of BSc Statistics Hons, Sampada Kapur and Alisha Manku, taught the different skills.

The topics covered were Basics of public speaking, order of speech, types of speeches, fluency, fillers, different ways to build memory and reduce dependence on notes, effective introduction and transitions between different topics. Interview skills and ways to stand out in a group discussion were also discussed. The mentees were also taught about the non-verbal skills such as body language and voice modulation. There was conduction of activities to familiarise the mentees with a hands on experience of the skills learnt.

Students were also given homework at the end of each session which had to be presented in front of the class or recorded and submitted on Google Classroom. They prepared speeches on different topics like preparing an effective introduction, speech on their favourite artist, speech on their subject etc., involving their verbal skills while portraying their non-verbal skills. They were also given notes at the end of each session which included all the discussed topics in the session. They were also given comments and grades of their performances in each homework assignment in order for them to work on their weak points. After 2 weeks, the mentees could see and feel a difference and could notice improvements in the way they deliver speeches. They even left a positive feedback. This program was highly appreciated by everyone and was considered as a remarkable effort.



PYTHON MENTORSHIP PROGRAMME

A week long mentorship program on "*Basic overview of Python (with a case study)*" was conducted under the mentorship program organised by the Department of Statistics of Mata Sundri College for Women, Delhi University from November 5, 2020 to November 12, 2020 for students of second year of BSc (Hons) Statistics. The whole session was conducted under the guidance of our esteemed Principal Prof.(Dr.) Harpreet Kaur, Teacher in-charge Ms. Prabhsharan Kaur, and the program coordinator Dr. Kalpana Yadav.

Nishita Gupta and Tanisha Gupta were the mentors of the session. It was a 14 hour program in which 2 sessions of 2 hours each were held daily. The program was undertaken by 21 students. Python is one of the most vital coding languages which is experiencing incredible growth and exponential rise year by year. It is indeed very popular among developers of the present generation.

From downloading python to understanding the various types and structures of data, everything was thoroughly explained in the workshop. Various operators and different methods and functions in Python were clearly defined throughout the course.
An assignment was given for assessing the understanding of the students. Quizzes were conducted time to time so that doubts of the students gets cleared.
All the assignments were duly submitted by the students. All the students showed great interest throughout the session. The program was highly appreciated by both the mentees and the teachers.

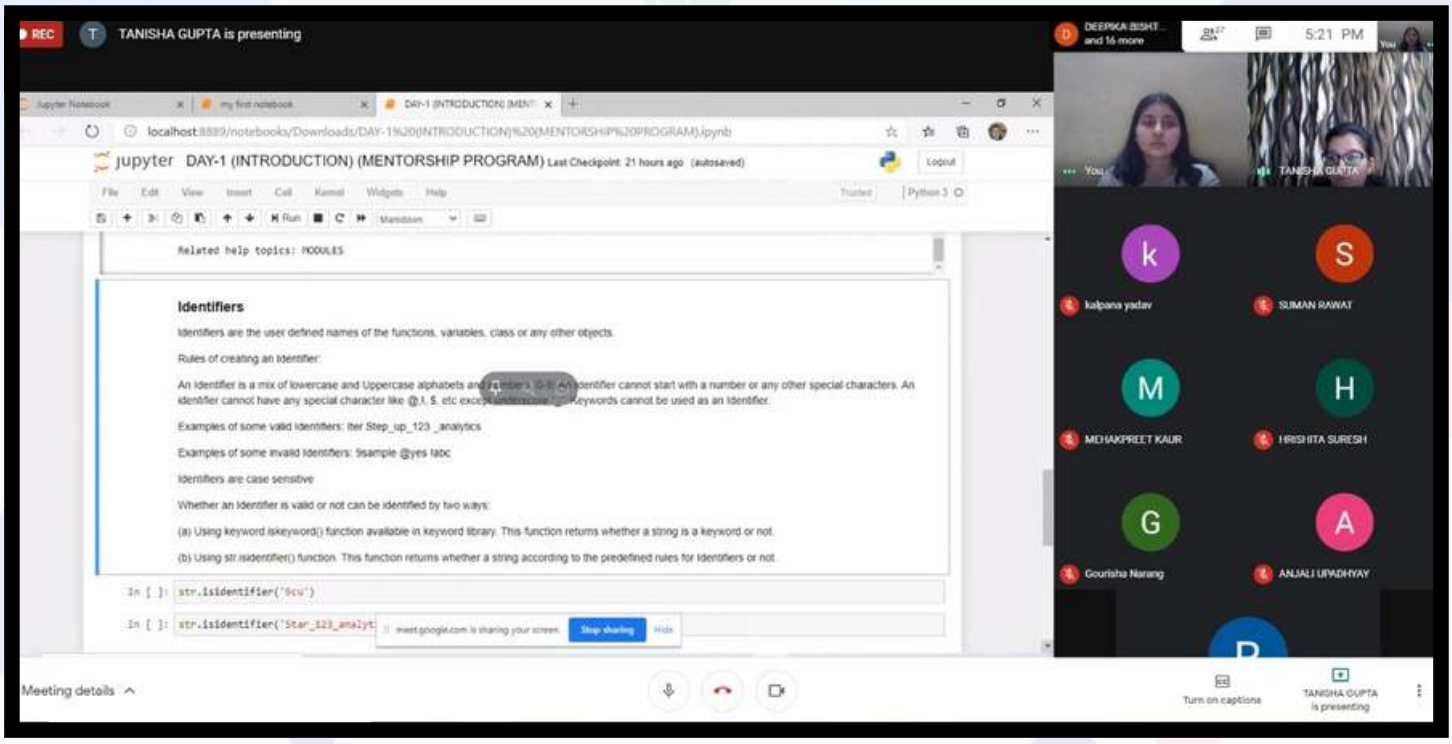


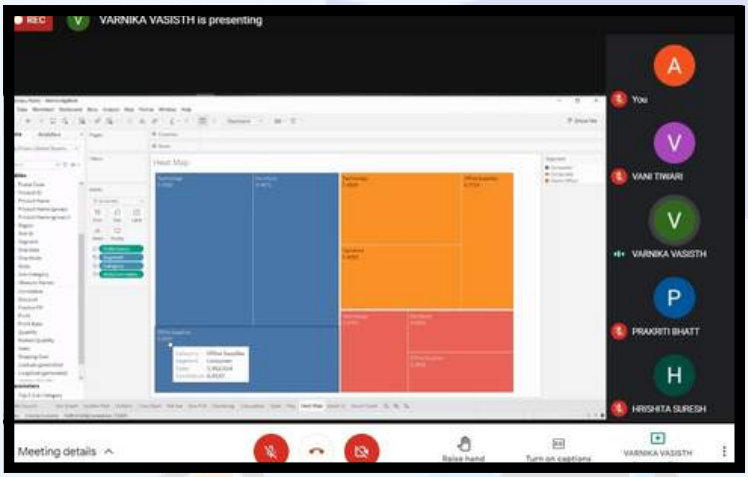
TABLEAU MENTORSHIP PROGRAMME

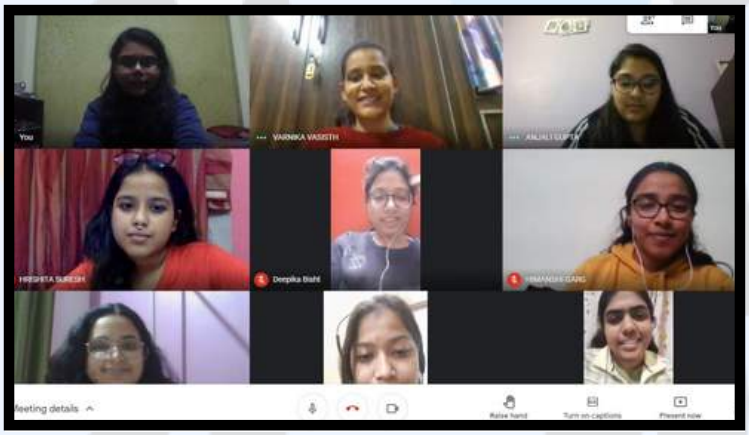
The students of Department of Statistics of Mata Sundri College for Women, University of Delhi, organised a 7 day well planned and targeted workshop on " *Visualising Data using Tableau* " under the mentorship program from November 17 to November 23, 2020 for students of second year of BSc (Hons.) Statistics. The whole session was conducted under the guidance of our esteemed Principal Prof.(Dr.)Harpreet Kaur, Teacher in-charge Ms. Prabhsharan Kaur, and the program coordinator Dr. Kalpana Yadav.

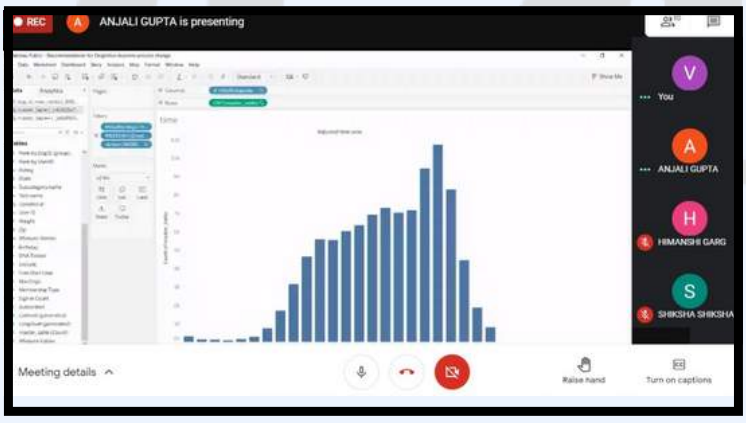
Anjali Gupta, Vani Tiwari and Varnika Vasisth were the mentors of the session. The program was undertaken by around 15 students. The program was arranged with the motive of enriching students with the knowledge and practical experience of Data visualisation with the help of a useful tool "Tableau".

Number of concepts and features of the tableau were discussed throughout the sessions and the students showed an active interest in learning the software. Sessions ranged from downloading tableau to understanding different forms of graphs and charts which can be made on the software. Analysing time series data to story developing were the key highlights of the session. Different and unique forms of graphs were discussed using which the data could be represented in a more unique and advanced way. An assignment was given to evaluate the knowledge acquired from the program.

All the assignments were duly submitted by the students. The session concluded with a discussion of the assignment.







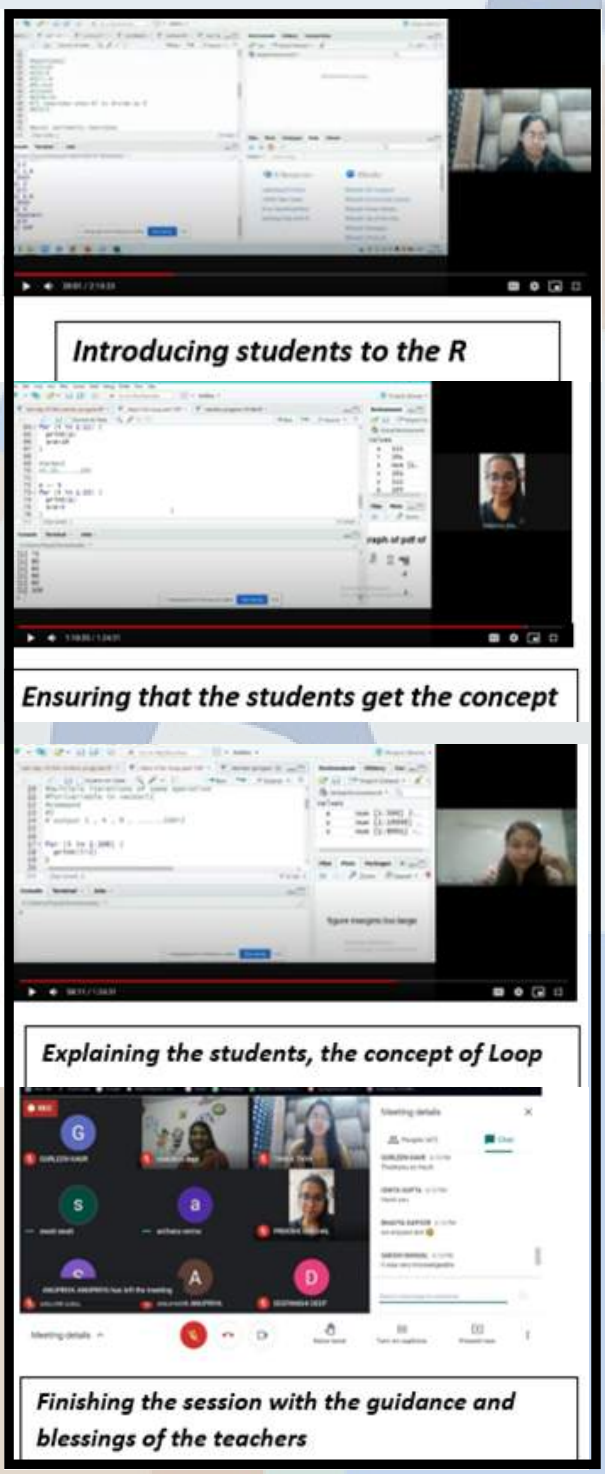
Mentorship Program
R SOFTWARE

The students of B.Sc. Statistics(Hons.) of Mata Sundri College for Women, successfully organised and concluded a 7 day workshop on "*R software*" under the guidance of our respected Principal Prof.(Dr.)Harpreet Kaur, teacher in-charge (Statistics) Ms. Prabhsharan Kaur, teacher in-charge (Commerce) Ms. Jaspal Kaur Sahni and the program coordinator Dr. Swati Kujal and Dr. Komaldeep Kaur. The entire workshop was held in sessions for 7 days, from February 17 to February 24, 2021. The session was exclusively held for students of B.Sc. (H) Statistics, B.Com. (H) and B.Com. (Programme) students. The mentors of the session were Prekshi Singhal, Payal Gupta and Tanya Behl.

The program was arranged with the motive of enriching students with the knowledge and practical experience of "R software". A number of concepts and the features of the R were discussed throughout the sessions and the students showed an active interest in learning the software. The session was attended by around fifty students.

The journey kick-started by explaining the students the process to install R. The mentees made the students comfortable with R studio and discovering R as a calculator. Students also learned the basics of descriptive statistics, correlation, and regression along with understanding discrete and continuous distributions. The students were provided with 3 assignments to evaluate the knowledge acquired during the whole session.

All the assignments were duly submitted by the students. The session concluded with a discussion on the assignments. In addition, a feedback form was circulated among the students to give their feedback and share their valuable suggestions for the upcoming workshops. The overall session benefitted participants as well as mentors.



Introducing students to the R

Ensuring that the students get the concept

Explaining the students, the concept of Loop

Finishing the session with the guidance and blessings of the teachers

EXCEL MENTORSHIP PROGRAMME

MS Excel comes very handy in the corporate, teaching and academic world. Having a basic knowledge of this tool is a must for the present generation. A well formulated and propitiously executed sessions on excel was conducted under the guidance of Principal Prof.(Dr) Harpreet Kaur, Teacher in-charge Ms. Prabhsharan Kaur, Dr. Harinder M. Sandhu, faculty Psychology department and program coordinators Dr.Archana Verma, Dr.Swati Kujal and Dr.Komaldeep Kaur. It was a 12 day workshop conducted from February 22,2021 to March 5, 2021 for all the students of Psychology Department and Commerce Department and first year students of Statistics Department. Students of 2nd and 3rd year: Jessica Kaur, Mehak Preet Kaur, Pakhi Malhotra and Suhani Vadhera were the mentors of the program.

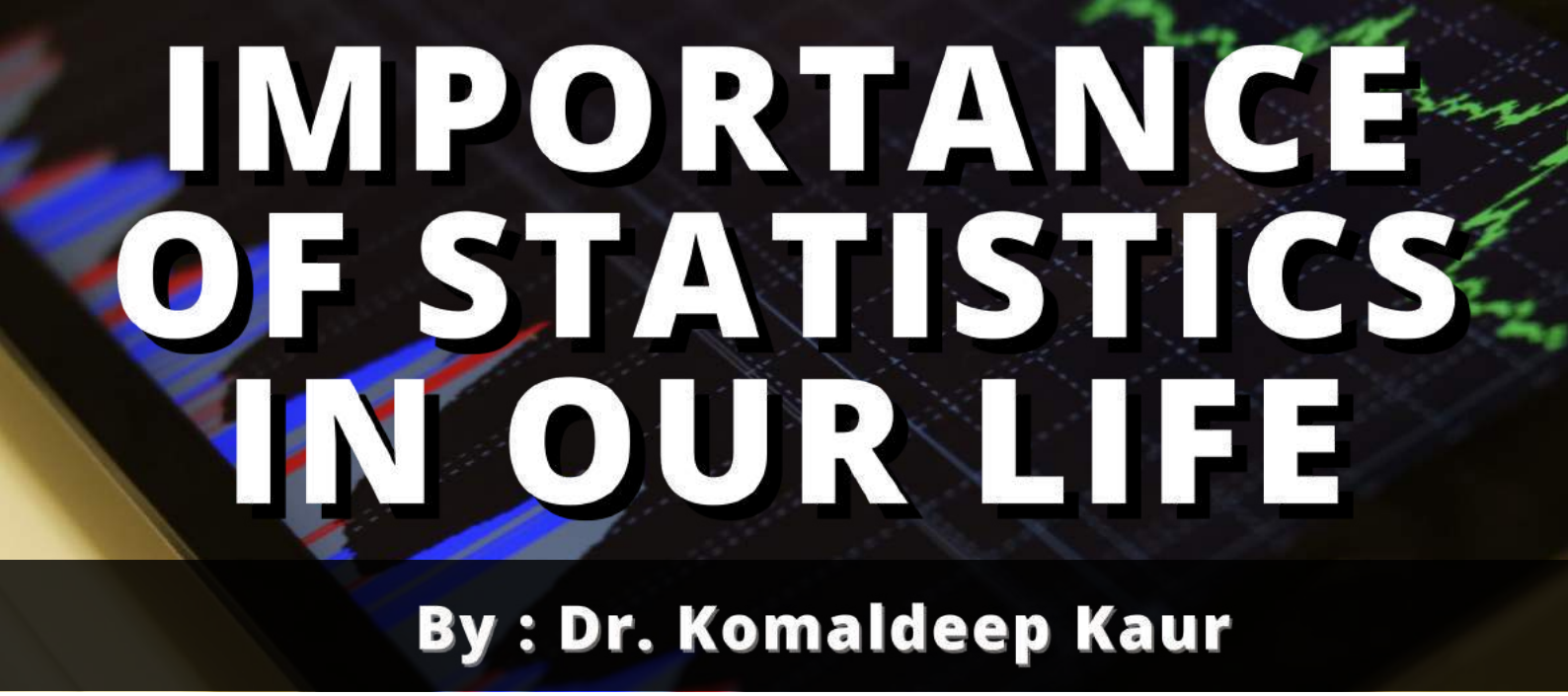
The programme was initiated to familiarize the students with some basic statistical analysis technique using MS Excel. Thus with the motive of imparting knowledge of MS Excel, the mentors conducted all the sessions with high spirits, zeal and valour. The sessions were quite informative and was indeed fruitful to all those who attended. Various concepts and topics were taught in depth in the sessions.

The mentors kept a check on whether each and every student understands the theoretical and practical application of concepts taught in the class. An assignment was also given to check whether the students understood each and every concept thoroughly. The overwhelming response of the students was appreciated by the mentors and teachers alike.

The teachers duly appreciated the hard work and constant efforts put by all the students. Overall the workshop benefitted all the attendees.

ARTICLES

Any kind of writing can be an art , but creative thinking is the key. Whether you plan to immerse yourself in writing poetry, believe there is a novel in you trying to get out , or are simply tackling an essay or a blog post , your creative thinking and skill can combine to turn it into a work of art.



Croxton and Cowden defines statistics as the science of collection, presentation, analysis and interpretation of numerical data.

Progressively, the Statistics subject come to be more and more popular and its application has become more extensive. Now almost there is no field of human activity where statistics are not used. Nowadays it is used by economists, businessmen, scientists, administrators, etc. To be more precise about the importance of statistics in our life, lets discuss some astonishing reasons that we have overheard on several occasions.

1. Everyone lookout for weather forecasting. Have you ever thought how do you acquire that information? There are some computer models constructed on the basis of statistical concepts. These computer models relate past weather with the present weather and predict future weather.

2. Statistics frequently used by the researchers. They use their statistical skills to collect the relevant data. Otherwise, it results in a loss of money, time and data.

3. What do you understand by insurance? Everyone has some kind of insurance, whether it is medical, home or any other insurance. Several businesses use statistical models based on an individual application to calculate the risk of giving insurance. Life tables are indispensable for the solution of all questions relating to the duration of human life.

4. Statistic plays significant role in financial market. Statistics are the key of how traders and businessmen invest and make money.

5. Statistics play a big role in the medical field. For testing the efficacy of a manufacturing drug, injection or medicine for controlling/ curing specific ailments, most of the applications of medical fields lies in using the tests of significance (more precisely student's t-test). The testing of the effectiveness of a medicine by the manufacturing concern is a must, since only after the effectiveness of the medicine is proven by the sound statistical techniques that it will venture to manufacture it on a large scale and bring it out in the market. By statistical techniques (t and F significance tests), comparative study of different medicines can also be made.

FACTS ARE STUBBORN THINGS , BUT STATISTICS ARE PLIABLE.

6. In industry, Statistical techniques are used in quality testing. Companies manufacture many products on a daily basis and every company make sure that they sell the best quality items. But companies cannot test all the products, so they use sampling techniques which are a very important aspect of statistical theory.

7. We make variety of predictions in daily life. For examples, we keep the alarm for the morning when we don't know that we will be alive in the morning or not. Here we use statistics basics to make predictions.

8. Using statistics concepts, doctors predict disease. Suppose a survey shows that 75%-80% people have cancer and not able to find the reason. Where the statistics is involved, there you can have a better idea on how the cancer may affect your body.

9. News reporter makes a prediction of winner for elections based on political campaigns. Here statistics play a very important role to find out who will form the government.

10. Statistics data allow us to collect the information around the world. The internet is a devise which help us to collect the information. The fundamental behind the internet is based on statistics and mathematics concepts.

11. Not only in peace times but in war times also statistics can be used very effectively. It is practically not possible to face a war without the factual data concerning the military strength of the enemy in terms of manpower, military tanks, war aeroplanes, missiles, ammunition etc.

BIOSTATISTICS

By : Jiya Mendiratta (1st Year)

BIOSTATISTICS is the application of statistical methods in studies in biology, and encompasses the design of experiments, the collection of data from them, and the analysis and interpretation of data. The data comes from a wide range of sources, including genomic studies, experiments with cells and organisms, and clinical trials. Biostatistics is the application of statistical principles to questions and problems in medicine, public health or biology. One can imagine that it might be of interest to characterize a given population with respect to the proportion who has asthma, and it would also be important to estimate the magnitude of these problems over time or perhaps in different locations. Statistics is a science of compiling, classifying, and tabulating numerical data and expressing the results in a mathematical and graphical form whereas biostatistics is the branch of statistics concerned with the mathematical facts and data related to biological events.

Francis Galton created the statistical concept correlation. Sir Galton for the first time used statistical tools to study differences among human population. He also invented the use of questionnaires surveys for collecting data on human communities. Biostatistics are the event and application of statistical method to a good range of topic in biology. It encompasses the planning of biological experiments, the gathering and analysis of knowledge from those experiments and therefore the interpretation of the results. Biostatistics is sometimes distinguished from the field of biometry based upon whether applications are in the health sciences (bio statistics) or in broader biology (biometry; example, agriculture, ecology, wildlife biology). More and more things are now measured quantitatively in medicine and public health. There is a great deal of inherent variation in most biological processes. Public health and medicine are becoming increasingly quantitative.

As technology progresses, the physician encounters more and more quantitative rather than descriptive information. In one sense, statistics is the language of assembling and handling quantitative material. Even if one's concern is only with the results of other people's manipulation and assemblage of data, it is important to achieve some understanding of this language in order to interpret their results properly. Statistics pervades the medical literature. As a consequence of the increasingly quantitative nature of public health and medicine and its reliance on statistical methodology, the medical literature is replete with reports in which statistical techniques are used extensively. Biostatistics is used to determine how diseases develop, progress and spread.

For example, biostatisticians use statistics to predict the behavior of an illness like flu. It is used to help predict the mortality rate, the symptoms and even the time of year people might get it.

It is used to test whether the difference between two populations is real or by chance occurrence, to study the correlation between attributes in the same population and to evaluate the achievements of public health programs. Biostatistics has applications in all the branches of life sciences such as for mapping chromosomes, for studying the behavior of genes in a population and for conduction of drug treatment trails etc. Biostatistics deals with data arising from biomedical research. It remains a very active research area with complicated time-to-event data and missing data emerging in application areas including medicine, genetics, neuroscience, and engineering. Recent advances in biomedical research have created new challenges and opportunities for statisticians and data scientists. For example, big data analysis, precision medicine, artificial intelligence, causal inference, and other new research fields have inspired data scientists to develop modern statistical methods and innovative inference procedures.

DATA SCIENCE AND STATISTICS

By : Vanshika Mishra (1st Year)

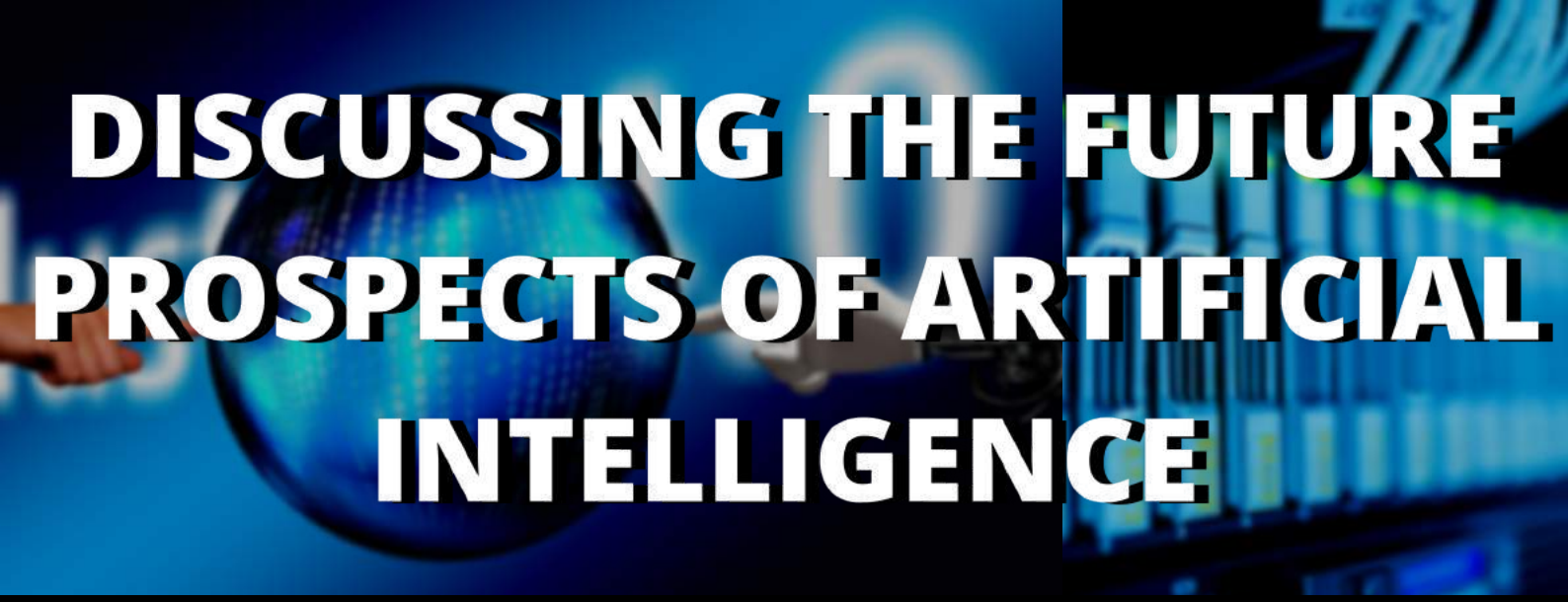
Over 50 years ago, there was a subject, which was unnoticed and mainly focused on the study and analysis of data. Statisticians urged academic statistics to transcend its boundaries beyond the realm of theoretical statistics. More stress was laid on data presentation. Data science is a discipline which is guided by computing informatics, operation research, mathematics and statistics.

Statistics is treated as the most important tool in sorting and analysing data. It is beneficial in giving a deeper vision of the data. Statistics widely depends upon experiments and surveys. With the help of descriptive statistics, calculations like mean, median, etc. can be done on the data. On the other hand, inferential statistics helps in drawing inferences and conclusions from the population. Both domains of statistics play a very important role in Data Science. In order to get a structured data and making predictions, statistical methods and tools are very essential. They are able to carry out many analytical tasks.

Statistical Analysis is the study of surveying a given set of data and observing patterns and trends. It is used in research fields to create statistical models for performing certain experiments on a population.

The focus is to gather information from the smallest quantity of data. The experiments involve accurate calculations and therefore give respective results. Statistics forms the base of Data Science. It requires optimization of huge databases which is achieved with the help of different statistical tools. In today's data driven world, Data Science is turning out to be one of the most demanded professions. Almost all firms and companies are in search of data scientists as the data keeps on piling up and the need of interpreting, analysing and cleaning it is rising. The ultimate aim of Statistics and Data Science is to extricate cognizance from large amounts of data.

> "DATA SCIENTIST IS A PERSON WHO IS BETTER AT STATISTICS THAN ANY PROGRAMMER AND BETTER AT PROGRAMMING THAN ANY STATISTICIAN."
> -JOSH WILLS



DISCUSSING THE FUTURE PROSPECTS OF ARTIFICIAL INTELLIGENCE

BY : Davleen Kaur (1st Year)

The precursory decade witnessed an upsurge in technology, data and artificial learning. With advanced automation and modern science, people have proved as why Homo-sapiens are regarded the best species of the world. Artificial intelligence, machine learning, robotics, data manipulation, statistical analysis, improvement in modern science and research are some of the many accomplishments of the mankind. The decade also gave opportunities to research and explore some unexplored and infamous fields like risk management and quantitative analysis.

> "BIG DATA IS AT THE FOUNDATION OF ALL OF THE MEGATRENDS THAT ARE HAPPENING TODAY, FROM SOCIAL TO MOBILE TO THE CLOUD TO GAMING."
> – CHRIS LYNCH

Technology has helped in shaping modern workspace and has improved the quality of living. With investment in clean technology, cognitive cloud computing, augmented and virtual reality we have experienced things which are beyond reality. The antecedent decade focused on quantitative analysis, preferred on finding out answers and giving their opinions on any debate with distinct and accurate facts and figures, to ensure that the right policies are implemented to ensure economical as well as societal welfare. Thus the public has become more enlightened of their rights and are well aware of their welfare. Increase in technological levels have indeed led to welfare of the public as now the public can easily access modern ways and techniques to improve their quality of living.

The decade has opened a door of opportunities for the blooming youth of the globe. The youth is provided with a strong foundation, the task for coming generations is to build a fierce and powerful structure on it. With enormous and infinite options lying in front, the youth has the responsibility to carry forward the legacy with persistence, assiduity and diligence.

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IMPORTANCE OF STATISTICS IN BUSINESS

By : Akansha Goel (1st Year)

Whenever the word ‘business’ is heard, ‘sales’ is the word which comes to our mind next and what exactly assists sales is ***STATISTICS***. Don’t believe me but I am sure after reading the article you would all agree to my point too. So what does a businessman do? He manufactures and sells the goods produced to the public but both of these basic functions of the businessman cannot be transcended without the help of statistics tools such as survey, statistics driven softwares to collect and analyse the demand of the customer and to what extent i.e. the quantity in which it is required in order to maximize their total revenue. The graphs and the tables formed i.e. the stats help them to know the exact condition of the market and its inclination so that they could come out with offers and discounts in order to attract public towards their product maximizing their sales. The businessmen who is believed to be very quick and accurate in decision making is all assisted by statistics at every point from analysing their sales, profit margins, wages of the employees, the improvements required in the product, the billing counters are all carried forward with the help of statistical tools. The financial resources required for investing in the business are also arranged according to the assistance given by the data analysts. The marketing and advertisement of the products also needs statistics. Now you would be thinking how?

"Statistics forms the backbone of businesses and thereby the backbone of the economy of the country."

Whenever a method of marketing is thought the percentage of people to get influenced, the age group to target, the kind of offers to be laid down are all done through statistics. You might have heard that now data is the new oil that means life is all surrounded with data and for the data and the demand for its upkeep and analysis, the data analysts are required and in big organizations who actually target all age groups and sell all kinds of products on a large scale have a large database not only of the customers but also of their n number of employees. So an organization is incomplete without data and where there is data, there is statistics. In fact I would say that an organization isn't an organization if they do not have data and its proper upkeep, in such a case the company will surely drain out so this actually proves how important statistics has become in the business point of view. The banking sector can't function without statistics and this banking business forms the backbone of the country since all the customers of the bank have loads of data for a particular bank account & its regular maintenance is all handled by statistical applications. In order to calculate the average, mean, median, loss , profit and all the other commerce related terms in businesses dealing with large amount of data is all handled by statisticians. Statistics also helps in maintaining employee performance management. A manager collects data about employee productivity, such as the number of tasks completed or the number of units produced. He or she must analyse data to find ways in which an employee should improve to achieve maximum productivity. Many companies also collect data about employee engagement and happiness on the job, which can be tracked to not only keep workers motivated but ensure they don't leave for other positions elsewhere. This helps in increasing the efficiency of the employees and also creates a healthy working environment. I have listed lot of points to prove the importance of statistics in businesses and hope that you will now agree to what I mentioned in the beginning of the article.

Statistics suggest that when customers complain, business owners and managers ought to get excited about it. The complaining customer represents a huge opportunity for more business.
- Zig Ziglar

BIG DATA IN CRICKET (CRICLYTICS)

By : Vanshika Bansal and Himanshi Garg (2nd Year)

India is such a country where people are crazy about cricket. The fusion of Big Data Analytics and cricket is what criclytics is. It empowers teams with the ability to make accurate decisions about a game that is known to be unpredictable. It also helps to track the performance of an individual player, which helps the team management and selection committee to select the best player for a particular tournament by analysing the data.

WHAT DOES CRICLYTICS DO?

1) Generate a huge amount of data
2) Capture data to deliver greater insight.
3) Play a pivotal role in the World Cup.

BIG DATA AND THE ICC T20 WORLD CUP:

Fans obsess most about the players thus churning out information on every player's performance is the top priority for the ICC. The main objective of the ICC is to deliver real time and interesting statistics to fans through their app and website. The ICC is said to be using the SAP HANA Cloud Platform and the SAP Lumira software to analyse the statistics on the scores, the performance of the players, the player profiles, and more, which updates information every 20 seconds.

TOOLS USED FOR INSIGHTS ON CRICKET:

1) Insights by ESPNCricinfo
2) WASP (Winning and Score Predictor)
3) Visual Analytics Powered By Qlik
4) Win Probability Statistic
5) ScoreWithData by IBM

In the future, it is reported that the ICC has plans to mine data from social media to gain insights into what interests fans the most.

Cricket is a sport that contains a lot of statistical data. That data can be put for proper use to predict the results of a game. So, it is obvious that analytics can play a decisive role in the game of cricket. Sports Analytics is a game changer when it comes to how professional games are played, especially how strategic decision making happens, which until recently was primarily done based on "gut feeling" or adherence to past traditions.

"The kind of fantastic data being mined is a very natural development. Technology, big data and analytics are coming together to drive the way the game is played and watched."

INSURANCE AND STATISTICS

By : Prekshi Singhal and Payal Gupta (3rd Year)

> **“WHAT PERCENTAGE OF POLICIES ARE EXPECTED TO PAYOUT? HOW MUCH MONEY THE COMPANY MUST EXPECT TO PAYOUT IN CLAIMS?**

Statistics is the science of learning from data. Statistical knowledge helps an individual to use the proper methods for collecting data, employ the correct analysis, and present the results effectively. Statistical analysis is thus used in almost all fields to make sense out of the vast amount of data that is available. Thus, statistical methodologies are not only useful in drawing important results but also play a significant role in producing new findings and understanding the work of others. One such field which has wide use of the statistical techniques and methodologies is the Insurance Sector. Insurance is basically the business of risk, as it involves the transfer of risk from one party to another.

The main incoming and outgoing source of income in the business of insurance is through premiums and claims respectively. Many statistical models are used to model claims and losses. Parameters for these distributions are estimated using Method of moment, Maximum likelihood estimates etc. and then Goodness of fit testis applied to check how well our distribution fits to the data. Time series model plays an important role in forecasting future values. Statistics is used to answer the most important questions for the insurance industry. What percentage of policies are expected to payout? How much money the company must expect to payout in claims? Different methods of data collection either in primary or secondary form are used to determine the required reserves, premium and future predictions. Apart from this, many statistical methods for e.g.: Linear model method which uses regression as the main tool in determining the factors affecting premiums, Loss distribution method in which histogram and bar graphs are made to compare different categories and complex statistical tools such as Ruin Theory and Run-off triangles are used to develop new products, absorb and evaluate risk and ruin when balancing claims, reserves and premiums. Thus, ***statistics plays an irreplaceable role in the life cycle of insurance business for both life and non-life insurance.***

STATISTICS IN PHARMACEUTICALS

By : Anjali Upadhyay (2nd Year)

Statistics help in

Measuring the stability of drugs:-
II) Production of drugs according to demands.
III) Effectiveness of drugs.
IV) Quality control of drugs.
V) Marketing of drugs.
VI) Testing the side effects of the drug with the help of data.
VII) Going through the procedure of approval and public distribution of drugs.

Statistics in developing a drug

A lot of statistics tools are used during production, clinical trials and marketing and public distribution of drugs:-
1. Average (mean, median, and mode): Used during experiments like stability testing, combination of chemicals and checking acidity or basicity of solutions to calculate mean average results.
2. Standard deviation and variance: It is a measure of testing precision. Can be used to evaluate precision at various points in a process or to evaluate the precision between two different methods of the experiment.
3. Q test for rejecting data: It is used to check outliers in data i.e. to check unusual deviation in a data set to see if it can be statistically rejected.
4. Confidence limits: It helps in finding the probability of the true value being within a calculable range. It makes use of multiplying standard deviation with student's t-factor that determines the confidence interval of the observation at the stated confidence level.
5. t, F, Chi-square and other tests: Helps in comparing the results of two data sets. For e.g.: side effects of different medication in the same population.
6. Correlation: Helps to detect the relation between two attributes of a data, for e.g.: how the effect of a medicine increases or decreases due to the change in dosage, how increase or decrease in temperature affects the stability of certain medication.

Clinical Trials

Clinical trials are research studies that evaluate new ways to improve treatments and quality of life for people with disease and in present scenario global pandemic COVID-19 Results from Clinical trials help develop:

1. New drugs/vaccines,
2. New diagnostic tools,
3. New clinical procedures,

Participants volunteer for clinical trials.

In this, method of stratified random sampling is used to divide the volunteers into different strata based on shared attributes or characteristics such as gender, medical conditions and other specifics. These strata's are used in different phases of clinical trials.

Clinical trials have 4 phases:

Before trial begins, volunteers need to understand the potential benefits and potential risks before participating in clinical trials that's why pre-clinical phase is conducted to test the new treatment on animals and healthy volunteers. This part comes under descriptive statistics where we are using the observed (benefits and risks) for further research.

Phase 1- In this, new treatment is tested for the first time to know how treatment affects the body, to determine a safe dose range for vaccine and their side effects. It involves relatively 20-80 volunteers. ***Stats approach-*** Association analysis is performed to capture the correlations between drug therapeutic indications and side-effects. In order to achieve this goal, we adopted Fishers exact test, which is a widely used approach for measuring the significance of the association between two nominal variables. ***For example***, to test the significance of the association between drug therapeutic indications A and drug side effect B.

Phase 2- The study involves how well a new treatment or combination of treatment goes well with certain types of patients. It involves up to 300 patient volunteers. ***For example***, out of total cancer patients, half of the patients are selected randomly and are given cancer treatment along with new vaccine and other half are given cancer treatment along with standard treatment of corona virus. Now side effects in both the cases are noted. Aim is to determine which combination of treatment will have less side effects. Chi- square test is used to compare the side effects in both the cases.

Phase 3- In this phase effectiveness of adding a new treatment to the standard treatment is studied. 100-1000 volunteers participate in this phase. ***Stats approach***- Participants are randomly split into two groups: 1st group (treatment group) receives the standard treatment + new vaccine and 2nd group (control group) receives standard treatment + placebo (a treatment that looks identical to the new treatment but contains no active ingredient). In this phase, mean time taken to develop anti bodies in both the groups are compared using Z-test. (Test of significance for difference in means)

Phase 4- In this phase no volunteers are involved, researchers' monitor drug safety and effectiveness. It involves optimal usage.

DATA VISUALIZATION

By : Anjali Gupta , Vani Tiwari and Varnika Vasisth (3rd Year)

Data has limitless potential to transform businesses and the world—as long as people are empowered to use it. But all the data in the world is useless – in fact it can become a liability – if you can't understand it, there are many ways which can help us to draw insights from the data, simply, they help us to understand the data and one of them is Data Visualization. Data visualization is an interdisciplinary field that deals with the graphic representation of data. It is a particularly efficient way of communicating when the data is numerous. It's all about how to present your data, to the right people, at the right time, in order to enable them to gain insights most effectively. But a visualization is a waste if it is not good enough to gain insights, so what exactly a good visualization is? A good visualization tells a story, removing the irrelevant information from data and highlighting the useful information. However, it's not simply as easy as just dressing up a graph to make it look better. The plainest graph could be too boring to catch any notice. The data and the visuals need to work together, and there's an art to combining great analysis with great storytelling. But, now, the question arises how we can make a visual good and effective, well there are many software to do that and some of them are, Sisense, Microsoft Power BI Pro, SQL Server Reporting Services, Tableau, IBM Cognos Analytics, SAP Business Objects BI, Domo, Oracle Business Intelligence, Qlik Sense Enterprise, SAS Enterprise BI Server, Google Analytics.

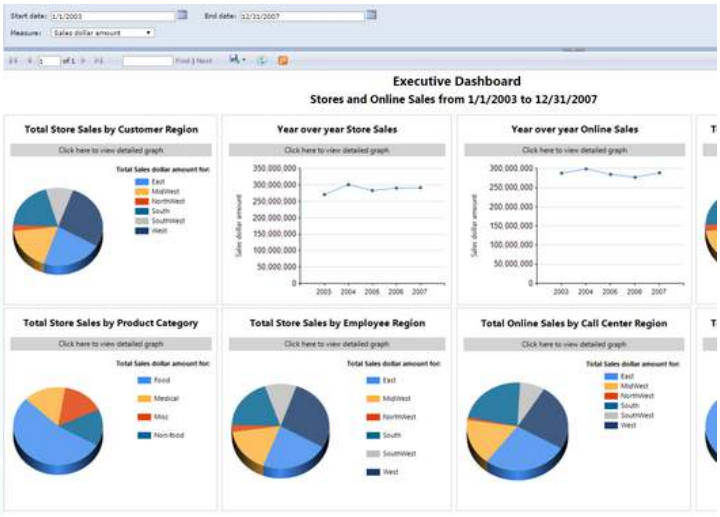
TABLEAU is often regarded as the grand master of data visualization software and for good reason. Tableau was founded in 2003 by Co-founders Chris Stolte, Pat Hanrahan, and Christian Chabot as a result of a computer science project at Stanford that aimed to improve the flow of analysis and make data more accessible to people through visualization. Tableau has a very large customer base of 57,000+ accounts across many industries due to its simplicity of use and ability to produce interactive visualizations far beyond those provided by general BI solutions. It is particularly well suited to handling the huge and very fast changing datasets which are used in Big Data operations. In tableau data can be visualized at the speed of thoughts. Anyone can create visualizations using either Tableau Desktop Professional Edition or the Tableau Public Edition. Tableau Public is a free platform to publicly share and explore data visualizations online. We can easily create stunning interactive graphs, maps, and live dashboards in minutes on this free platform. No coding is required for visualising the data. It can be connected to data in a variety of formats like Excel, CSV, and Google Sheets and also the work can be saved to our Tableau Public profile to pick up where we left off. In 2008, Tableau was named a "Codie award winner" for "Best Business Intelligence Solution" by the Software and Information Industry Association.

SQL SERVER REPORTING SERVICES (SSRS) is a reporting software that allows you to produce formatted reports with tables in the form of data, graph, images, and charts. These reports are hosted on a server that can be executed any time using parameters defined by the users. It is part of Microsoft SQL Server Services suite since 2000. SSRS has faster processing of reports on both relational and multidimensional data. It allows better and more accurate Decision-making mechanism for the users. It provides a World Wide Web-based connection for deploying reports. Hence, reports can be accessed over the internet.

• SSRS allows reports to be exported in different formats. You can deliver SSRS reports using emails

• SSRS provides a host of security features, which helps you to control, who can access which report.

SQL Server Reporting Services also support ad hoc reports: the designer develops a report schema and deploys it on the reporting server, where the user can choose relevant fields/data and generate reports. Users can then download the reports locally. Microsoft SQL Server 2012 SP1 expands Microsoft support for viewing reports to mobile platforms, including Microsoft Surface, Apple iOS 6 and Windows Phone 8.



Power BI is a business analytics service by Microsoft. It aims to provide interactive visualizations and business intelligence capabilities with an interface simple enough for end users to create their own reports and dashboards. This application was originally conceived by Thierry D'Hers and Amir Netz. It was originally designed by Ron George in the summer of 2010 and named Project Crescent. Project Crescent was initially available for public download on July 11, 2011 bundled with SQL Server Code name Denali. Later renamed to Power BI it was then unveiled by Microsoft in September 2013 as Power BI for Office 365. The first release of Power BI was based on the Microsoft Excel–based add-ins: Power Query, Power Pivot and Power View. With time, Microsoft also added many additional features like Question and Answers, enterprise level data connectivity and security options via Power BI Gateways. Power BI was first released to the general public on July 24, 2015.

Key components of the Power BI ecosystem comprise: Power BI Desktop, Power BI Service, Power BI Mobile Apps, Power BI Gateway, Power BI Embedded, Power BI Report Server, Power BI Premium, Power BI Visuals Marketplace. Power BI gives insights quickly with an uncomplicated setup, no required training, and included dashboards for services. Analysts can upload reports and visualizations to the Power BI service, and the data is refreshed whenever the underlying dataset is updated. Dashboards update in real time, as data is pushed or streamed in, which gives viewers the ability to solve problems and identify opportunities quickly. Power BI works with Microsoft's digital assistant, Cortana. Users can verbally ask questions in natural language to access charts and graphs. It can also be integrated with artificial intelligence.

SISENSE was founded in 2004 in Tel Aviv by Elad Israeli, Eldad Farkash, Aviad Harell, Guy Boyangu and Adi Azaria. Sisense is built as a self-service Business Intelligence software solution, so all data visualization tools are easy to use and allow anyone to create meaningful dashboards and reports without having to rely on IT for continuous changes or customizations. Sisense is easy to use, even for non-techies, with dozens of available charts, graphs, indicators, and maps to truly unlock the value of your data. It integrates with external websites and web applications, removes limitations to data size, integrates with web portals, filters data by dropping fields on the canvas. It also includes integrated data connectors joining multiple data sources and formats. The company offers a flexible and scalable annual pricing plan that is suitable for the needs and budgets of both small companies and large organizations. Sisense also offers a fully functional free trial that takes you from data preparation and analysis to visualization.

IBM COGNOS ANALYTICS is an AI-fueled business intelligence platform that supports the entire analytics cycle, from discovery to operationalization. Cognos software was founded in 1969 by Alan Rushforth and Peter Glenister. Cognos not only create charts but it also interprets the data with AI. This software provides various features to perform data aggregation and create user-friendly detailed reports. Cognos also offers an option to export reports in XML or PDF format and view the reports in XML format. It provides a wide range of features and can be considered as an enterprise software to provide flexible reporting environment and can be used for large and medium enterprises. It meets the needs of Power Users, Analysts, Business Managers and Company Executives. Cognos comes with a 30 days trial period which includes guided demo to show you around Cognos analytics, stunning visualisations that will help you understand your data – and act on it, and AI assistance. Recently, IBM released a new, global interactive dashboard built on IBM Cognos Analytics to show the spread of COVID-19 across the world. The general public, researchers, data scientists, and media, can utilize this dashboard to conduct deeper analysis and filtering of regional data. This dashboard looks very interactive.

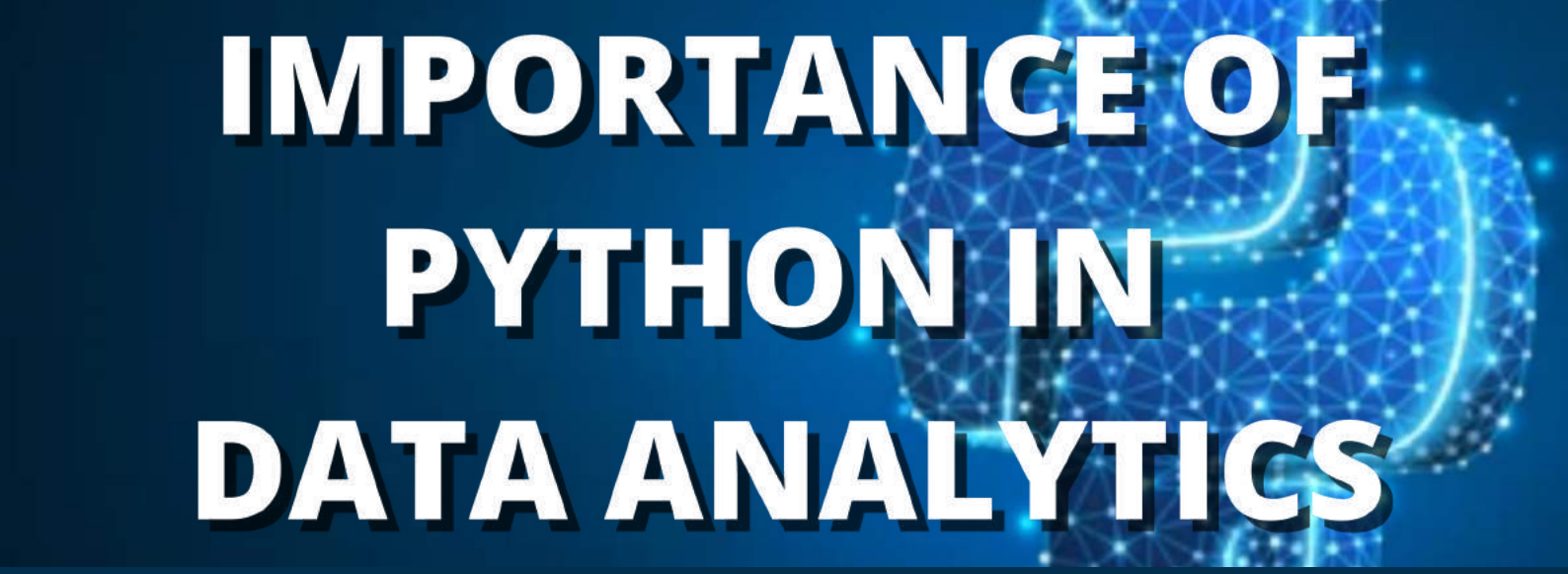
You can explore this dashboard on the link:
https://accelerator.weather.com/bi/?boardId=iC2B38B09B142481EB83935F641

WHAT IS STATISTICS?

By : Poorvi Kapoor (1st Year)

What comes to your mind when you first hear the word ***'Statistics'***? Graphs, numbers or lines but what if I say that statistics comes with enumerable career opportunities! The options are endless and the jobs are just a little. But what is the barrier that holds us from thinking of Statistics as a separate subject and just an extension of Mathematics? Most of us still don't know what statistics is all about. If we tell someone that we are a student of Statistics they might just think it's not a career option. Even Google offers with a line explanation of Statistics ***"numbers that have been collected in order to provide information about something"***. Statistics is defined as the aggregate of facts affected to a market extent by multiplicity of causes, numerically expressed or estimated according to a reasonable standard of accuracy, collected in a systematic manner for predetermined purpose and placed in relation to each other. It is the art of learning from data. It is concerned with learning from data and their analysis. As a plural, it means numerical data arising in any sphere of human experience, that is, mostly unknown sources working together whereas singularly it refers to the collection and interpretation of numerical data. The branch 'Statistics' is broadly divided into two forms: Descriptive and Inferential Statistics. Descriptive Statistics involves collection, analysation and characterization of data. It includes graphical methods and numeric measures. Inferential Statistic involves estimation and conclusion of data that has been classified under descriptive statistics.

Statistics is used in a variety of fields like commerce, trade, economics, chemistry, astronomy, industry etc. Every field comes with one or the other usage of statistics. Whether it be the biggest of MNC's or even a tea stall holder everyone requires the usage of statistical tools to draw conclusion on what step they need to take next. The levels of profit or losses, to obtain maximum results from minimum resources, all this needs carefully collected data and then drawing valid inference from it by using various statistical tools and techniques. Even in day to day life, the change in prices of goods, vegetables and the trivial yet most important decision of whether to buy a new pair of shoes or clothes so that the house budget is not affected comes under Statistics. The Government uses Statistics at a wide level whether it be for conducting a population census, prediction of outcome of elections or drawing conclusions on whether a new law should be passed or not. All this requires Statistics. It eliminates the chances of uncertainty and predictions by laying the facts and figures required to reach to a correct decision. Even in the outbreak of this global pandemic, Statistics was extensively used, be it to know numbers of cases rising daily, number of hospital facilities and medicine required, the requirement of vaccines or the recovery rates and so on. The graphs drawn helped the general public to easily understand the prevailing scenario and progress rate. Thus Statistics is a wide concept that is a helping hand in this growing economy.



IMPORTANCE OF PYTHON IN DATA ANALYTICS

By : Tanisha Gupta (3rd Year)

Codes can't lie but comments can !!! might seems to be simple yet very meaningful.

We all live in the digital era of high technologies, smart devices, and mobile solutions. Data is an essential aspect of any business. It's crucial to gather, process and analyse the data flow and to do that as quickly and accurately as possible. Nowadays, the data volume can be large, which makes information handling time-consuming and expensive. Due to this precise reason, the data science industry is growing at a rapid pace, creating new possibilities as well as opportunities and python is one of the solutions to understand and analyse such big data sets. It is a cross-functional language that has lots of advantages to offer. This object-oriented programming language is commonly used to streamline large complex data sets. Not only this it has a high readability that helps data analysts to save time by typing fewer lines of code for accomplishing the tasks. Therefore, it's not surprising at all that it is claimed to be the preferred programming language for data science.

Let me tell you why Python is a number one option for data analysis-

>> Easy to Learn

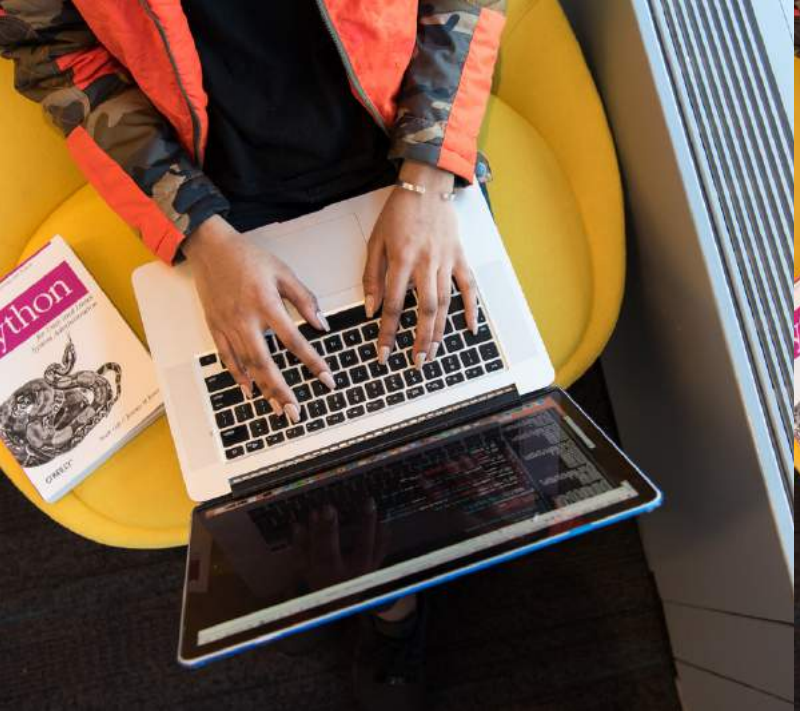
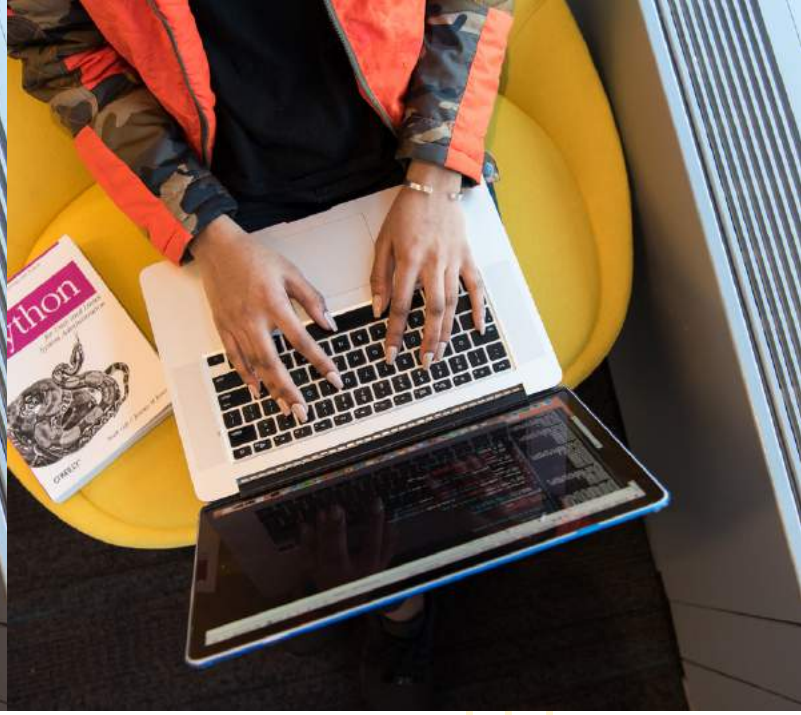
Being involved in development for web services, mobile apps as well as coding. Yes, it is one of the most famous language characteristics. More than that, a low and thus, fast learning curve is the next pre-eminence of Python when comparing it with older languages on offer.

>> Well-Supported

Having the experience of using some tools for free, you probably know that it is a challenge to get decent support but that's not the case with Python. Despite the high simplicity, there can be situations when you still need help with Python. Being in widespread use like in industries or academic areas, Python has a broad array of helpful libraries with tons of helpful and support materials. The great benefit is that all the libraries are available at no cost.

>> Scalability

This Python's feature is closely connected with the previous option. Comparing with other languages like R, Java, python is much faster and more scalable. Therefore, it is good in various fields that can solve a wide range of problems. That's why many companies have migrated to Python.

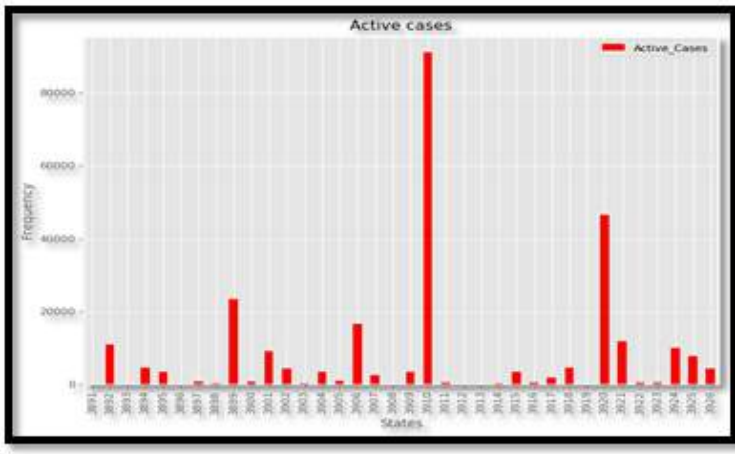
>> Huge Libraries Collection

As I have already mentioned, Python is one of the most supported languages nowadays. It has a long list of totally free libraries available for all the users. That's a key factor that gives a strong push for Python. If you're involved in the field, more likely, you are acquainted with such names as Pandas, SciPy, Stats Models Matplotlib etc libraries that are intensively utilized in the data science community. Here, you can easily find a solution needed for hassle-free work without additional expenses.

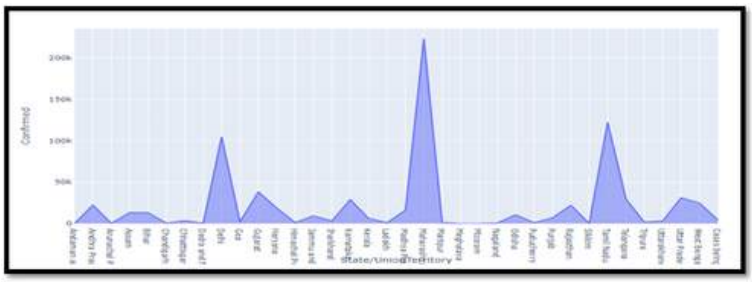
>> Graphics and Visualization Tools

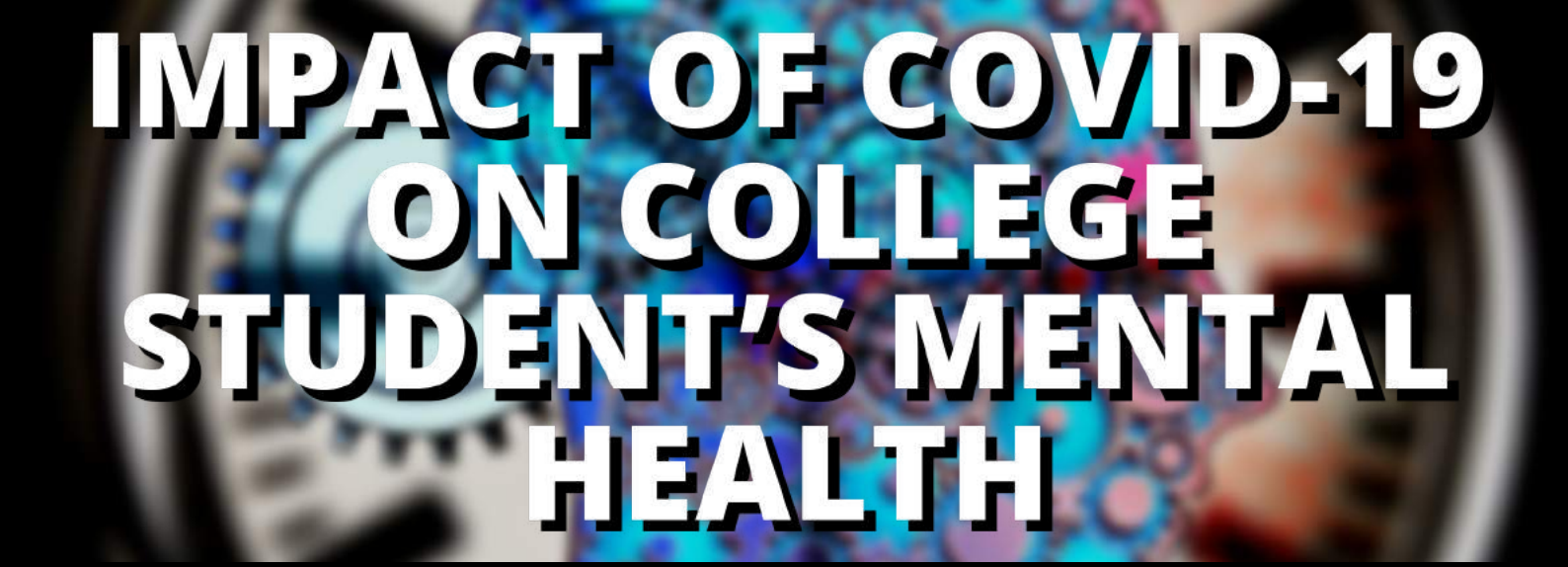
It's a well-known fact that visual information is much easier to understand, operate, and remember. So, here is some good news for you. There is a pack of diverse visualization options available that makes python a must-have tool not only for data analysis but for all data science. You can make the data more accessible and easier to use by means of creating various charts and graphics as well as interactive plots. Always remember that the success of your business directly depends on the ability to extract knowledge and insights from data to make effective strategic decisions, stay competitive and make progress and Python is the internationally claimed programming language to help us in handling our data in a better manner for a variety of causes.

```
# pandas plotting
from matplotlib.pyplot import figure
figure(num=None, figsize=(10, 7), dpi=80)
df_latest['Active_Cases'].plot.bar(color='r')
plt.title('Active cases')
plt.xlabel('States')
plt.ylabel('Frequency')
plt.legend()
plt.show()
```




```
# Area Curve :
px.area(df_latest,x='State/UnionTerritory',
y='Confirmed')
```





IMPACT OF COVID-19 ON COLLEGE STUDENT'S MENTAL HEALTH

By : Harsees Kaur , Diksha Hans , Aastha Joshi , Jahnvi Chawla and Yukta Kataria (3rd Year)

"College life is known as one of the most memorable years of a student's life exposing them to new experiences like meeting new people, learning new things, exploring places, etc."

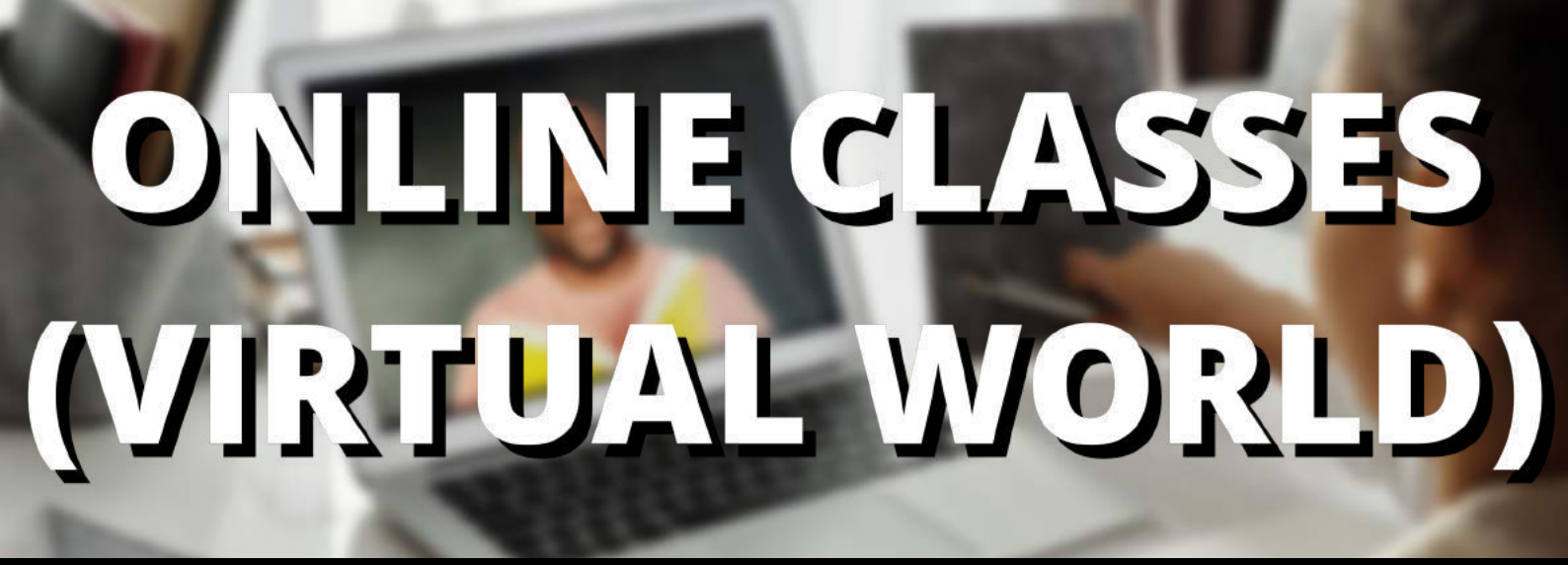
Sounds so interesting and happening right? It is true indeed but along with stressful time aside! Along with the perks of enjoying freedom more than ever, there comes academic pressure, tasks of separation from families, career building, future responsibilities, etc. Boarding on with the college life is a stressful time for many students thereby affecting their mental health. Mental health problems are very common among college students and have been an increasing concern. However, the COVID-19 pandemic situation has brought this vulnerable population into renewed focus. Following the pandemic, schools, colleges, offices and almost every place that involved human interaction was shut. It is important to note that college/school or even a normal routine are important coping mechanisms for young people with mental health issues and when everything is shut down they lose an anchor in life and their symptoms could relapse.

A registered clinical psychologist in Honk Kong named Zanonia Chiu said - "Going to school had been a struggle for some children (with depression) prior to the pandemic, but at least they had school routines to stick with. Now that schools are closed, some lock themselves up inside their rooms for weeks, refusing to take showers, eat, or leave their beds. For some children with depression, there will be considerable difficulties adjusting back to normal life when college resumes", and according to an online survey conducted with the study period from April 2020 to May 2020 - Total 53.1%, 37.2% and 24.3% had symptoms of depression, anxiety and stress respectively, with varying severities (N=727).The conclusion of the survey indicated that COVID-19 is building psychological distress among vulnerable college students, as they are forced to stay home, along with worsening financial situations, lifestyle changes, family situations and time spent on various activities.

The findings of this study highlighted the urgent need to develop interventions and preventive strategies to address the mental health of college students. Another Interview Survey study conducted by the Journal of Medical Internet Research highlighted that of 195 students, 138 (71%) indicated increased stress and anxiety due to the COVID-19 outbreak. Multiple stressors were identified that contributed to the increased levels of stress, anxiety, and depressive thoughts among students. These included fear and worry about their own health and of their loved ones (177/195, 91% reported negative impacts of the pandemic), difficulty in concentrating (173/195, 89%), disruptions to sleeping patterns (168/195, 86%), decreased social interactions due to physical distancing (167/195, 86%), and increased concerns on academic performance (159/195, 82%). To cope with stress and anxiety, participants have sought support from others and helped themselves by adopting either negative or positive coping mechanisms. It is important to know that creating awareness about any issue is never enough, action is what is needed. Taking leave from work/school because of a flu or a fracture is acceptable and might even help in the process of cure and healing however taking time off because of stress from a mental illness such as anxiety or depression, unfortunately, is not.

"What mental health needs is more sunlight, more candor and more unshamed conversation."

Mental health among students is a big concern however “UNTREATED” mental illnesses are a much bigger and exponentially growing concern. Reaching out is an important step for mental health issues to be addressed and treated but reach out to who? This is the point where our institution should take over. Colleges play a big role in this stage. Colleges do address this issue through means of orientation sessions and workshops but there is still a need to address mental health more directly. The methods to address mental health issues should be accessible, feasible and affordable for the students. For example, at Northwestern University, student feedback led orientation enabled organizers to shift their focus from expert speakers to student testimonials. Means to address the issue vary from traditional presentations and panel discussions, to role plays, small group discussions, etc. Here, students learn how to recognize mental illness symptoms, where to find resources and support, and how to talk to friends who might be struggling.



ONLINE CLASSES (VIRTUAL WORLD)

By : Nandini Karmakar (1st Year)

'***Online class'*** is a term which most of us weren't familiar with. Before this pandemic, we never thought of getting education at home. Covid has affected all of our lives. In past, pursuing education meant going to the school/college. But now the whole scenario has changed. Children are studying and attending classes from home. Just like there are two sides of a coin, online classes also have some advantages and disadvantages.

Starting from the ***advantages***, it saves time for both students and teachers, as they don't have to travel. All they have to do is to join through their mobiles or laptops. Secondly, students don't have to necessarily buy books from the shops like they had to do in offline classes, because they are given pdfs from which they can study. Therefore, it saves money. Third, it can be attended from anywhere in the world. Unlike in the offline classes, where we had to gather at a particular place. Fourth, computer based practical can be easily understood as students can share their screen with teachers. Also, it is easy for teachers to explain a topic with the help of pictures or animations which can be easily found on the internet.

Last but not the least Parents can keep an eye on their children whether they are studying properly or not.

Apart from advantages, it has some ***disadvantages*** too. First, sitting beside the computer or mobile for hours affects the eyesight of both students and teachers. Doctors are reporting many cases of eyestrain among children since the online classes have started. Secondly, students are becoming lazy as they don't have to go out of their home. Like the proverb 'All work and no play makes Jack a dull boy' is really happening. Third, students can bunk in the online classes easily. As they have no fear of punishment, they learned to disobey and disrespect teachers. Fourth, students have been given lots of assignments as a result of which most students are copying others assignments and are not learning anything new. Fifth, it is very difficult to communicate as teachers cannot give attention to each student. Lastly, it can be concluded that no matter how the classes are being held, a student must be dedicated and sincere towards their studies. After all, one's future depends on what they do in their present.

ACTUARIAL SCIENCE

By : Bhavya Walecha and Tanya Bahl (2nd Year)

An actuary is a business executive, professionally trained in the mathematical sciences. Actuaries specialize in the evaluation of financial risk—most often in the context of life, health, and casualty insurance, where they design, analyse, and refine varied programs to meet the insurance needs of society.

A growing number of actuaries work in the areas of asset/liability management and risk management. Some of these actuaries are employed by investment and consulting firms; others are employed by insurance companies.

Actuaries have been called financial architects and social mathematicians, because their combined analytical and business skills help solve a growing variety of financial and social problems. The actuarial profession is a demanding yet rewarding career choice.

PERVASIVE STATISTICS

In a world bombarded with numerical information, informed decisions rely on the ability to separate fact from fiction by applying valid statistical analyses and visualizations. Statisticians can provide crucial guidance in determining what information is reliable and which predictions may be trusted. They often help search for clues to the solution of a scientific mystery and sometimes keep investigators from being misled by false impressions.

Thousands of statisticians work in medicine, law, agriculture, public policy, marketing, manufacturing, engineering, and other fields in the social and natural sciences. The diversity of applications is an exciting aspect of the field and is one more reason why the demand for well-trained statisticians continues to be strong.

Touching Your Heart With Some Poetry

Poetry is an act of Peace!

THE ART AND SCIENCE OF STATISTICS

BY ANUBIS THE PHILOSOMANCER

Contributed by : Dr. Komal Goel

The power of Averages,
it means a lot
if you can
understand Means, a lot.

Assuming a Normal Distribution,
A Standard Deviation, or σ
defines where about 68% of the data falls;
roughly 34% above and below the Mean.

Two Standard Deviations
defines where a further 28% of data lies;
14% above and below 1σ and -1σ.

Positive 1-Sigma is one Standard Deviation above the Mean
Negative 1-Sigma is one below;
The range from -2σ to 2σ includes 96% of data.
The implications are astounding.

Within 3 Standard Deviations, one finds 99.7% of the data;
Within 4σ, 99.9%, 5σ, 99.999%,
the remainder are generally outliers and other improbable results.

To illustrate:
Suppose we had a group of 100 people,
and we wish to determine average height:
If our Mean height ends up being, say, 180 cm,
with a Standard Deviation of 20cm,
We can suppose that of 100 people, on average,
with a certain Margin of Error that is inversely proportionate to our Sample Size, or n
(for sake of argument, the Probable Error, or y, is 13.49cm)

4 are taller than 220cm
14 are between 200cm and 220cm
68 are between 160cm and 200cm
14 are from 140cm to 160cm
4 are shorter than 140cm

Statistics is the parent of Probability;
Statistics is the Art and Science of Forecast,
Statistics paves the way for modern Science
Statistics is a powerful weapon in the fight against Ignorance
Statistics, however, are generally and intentionally misrepresented and thus misunderstood.

THE BEAUTY OF THE CURVE

By Kathleen Flenniken

Contributed by : Dr. Meenu Goel

The curtain lifts on Bryant Elementary School's
Spring Recorder Recital. Ninety third-graders
fumble with their instruments, take a breath

and blow. Their parents, braced, breathe too
as "Hot Crossed Buns" emerges, a little scattershot --
the Normal Distribution brought to life.

By "Go Tell Aunt Rhodie," the audience
is moved by their sheer pretty-goodness,
though one kid knocks her music to the floor

and another squeaks to demonstrate
the tail two standard deviations
below the mean. The curve implies

that somewhere on stage another kid
just played a note so sweet he might shatter
Mrs. Wedermeyer's glasses. And if

there are a mother and father who think
that child is theirs, may they be forgiven,
even if the child shining in their eyes

is moving his fingers slightly out of rhythm,
even if he's never led the bell curve in his life.
In consecutive measures of almost unison

it's easy to believe these children are musicians.
Their parents do, so stirred by "Ode to Joy"
they rise to their feet with the final phrase,

clapping from the darkened auditorium
at once, as one, heroically, like the parents
they've meant to be.

EK NAYA SAFAR

By : Ridhi Taneja (2nd Year)

Mubarak ho apko zindgi ka naya safar

Naya hai sheher nai hai dagar

Chut gaye kuch rishte purane

But don't worry yaar mil jayenge naye diwane

Kuch tum jaise khuch tum se alag

So just smile and start a new life

Dosti yaari ko zara side mai rakh ke

Edhar gaur famiye janab

Course toh tumne acha chuna hai

Kuch socha hai ya ese hi liya hai

College mai admission jab hota hai

Toh andar khushi ke fuvare futne lagte hai

Lekin syllabus o dekh kar yeh bhi dagmagane lagte hai

Mana CP paas hai vahi maat ghumte rehna

Varna paper mai café ki menu sheet hi likhte rehna

Don't take a chill pill coz yaha ki teachers hai thori strict

Just because they want you to be the best

Ab kya kare college ka har din mamuli nahi hota

Aur 9 se 4 sirf parai nahi hoti

Gumo firo esh karo but parna na bhulo

Mana es saal kuch zyada hi speed breakers hai

But the best part is hum sab bhi toh sath hai

चक्रव्यूह

By : Saloni Jain (1st Year)

बचपन में pocket money, जवानी में शौक और appreciation
after marriage ससुरालियों और साड़ियों का
बुढ़ापे में यादों का
इतना deviation with regression
किस-किस का हिसाब रंखु बिना Stats के

ये Stats India की देन, 36करोड़ आराध्यों कीपहचान ससम्मान
without गलती without computer
सबसे बड़ा Stats का Principal, है हमारी खोपड़ी के अंदर
जिसमें है स्टोर हज़ारों Data

ये stats ने हमें LSR की admission list से निकलवाया
but "सुंदरी" मैड़मों से मिलवाया
हम बिचारे Stats के मारे Corona में पढ़ते सारे
No career only मस्ती, attendance लगा के सो जा बच्चे

किस-किस का Stats पढ़ु
135 करोड़ mango type ye 543 VIP का
Bollywood का या भ्रष्टाचार का
या फिर मेरी Family tree का
बेटी की नानी का दामाद कौन?
मेरे पापा !, की मामी की चाची का भतीजा चीखा
छक्का....

Sachin की century की century, Ekta kapoor की TRP
तो हम Stats वालों ने बनाई
Tata Birla Jio Ambani , इनकी कहानी Stats की मेहरबानी
Stats का घोल है सारा, Budget देश का है घोटाला
यह Public है सब जानती है, Stats को नहीं पहचानती है
गिनती हो रही शौचालयों की न की अस्पतालों की

Stats मैं नया Chapter लाएंगे, बिना गिनती किए Corona को भगाएंगे
बुरा ना मानो व्यंग है, Stats की जंग है

PONDERING

By : Muskan Hashim (1st Year)

All of humanity is but a set of numbers. You and I are nothing more than a statistic.

Just think about any decision you had to take recently. No matter your choice, you might find yourself ending up only as an infinitesimal decimal in the final percentage of a statistician's discourse. Let me give you an example pertinent to the world we live in today. Say, you're a republican and have to decide whether to wear a mask or not. Naturally, your political instinct might warn you against it. However, you might still be inclined to wear one because you're genuinely scared about what the "liberals" have to say about the SARS-COV-2. Now now, let's not go off-topic here. I know you might be wondering what you'd do if you were in a Republican's shoes. But that's not the point.

In the end, it seldom matters whether you are a republican or a liberal, especially in situations like these. What matters, in the end, is if you did go out without wearing that infuriating, smothering mask. And if you contracted the wretched virus because of it. If yes, hard luck! You're nothing more than one of the 84.1 million people who have it. That's all that people around the world will see. Not your gender, not your age, and certainly not your political belief. Of course, there will be studies about the correlation of these factors with the incidence rate of the infections, but that's another story altogether and not one possibly as broad as the one we talk about.

Moreover, the correlation must not be confused with causation. Now, perhaps that's a story for another day. But think about it this way, whether you go to college or drop out of high school, whether you choose to live or decide to die, no matter the decision, no matter your inclination or choice, whether you like it or not, you will be nothing more than a statistic.

It might sound a bit gloomy, to be honest. When I first thought about it, I felt almost insignificant. Like a tiny speck of dust in a galaxy of stars. Alas, isn't that all that we are, though?

A pale blue dot in an ocean of stars. Our planet one among millions, or perhaps, billions of others. All 7.8 billion of us fighting for a place in the world knowing full well we can't all possibly have it. It might make anyone feel overwhelmed but there's something about that that is so challenging, it is almost inspiring. We all know statistics and we all know life. But the true beauty of life lies in the ability to defy statistics. Only one question remains, are you up for the challenge?

STATS, STATS EVERYWHERE

By : Harshika Tyagi (3rd Year)

It won't be any exaggeration, If it's said that tools of statistician, are used in almost all fields of calculation.
Be it research, finance, sports, marketing, sales, health care or population counting.
It is a crucial process behind, How we make discoveries in science.
Making decisions or claiming predictions, It plays a crucial play in all situations.
Stats is involved everywhere, from collection to interpretation, From explanation to presentation.
Statistics helps avoiding a wide variety of analytical traps, By making sure that study follow apt methods in all aspects.
Challenging your own assumptions, Or drawing data-based conclusions.
Statistics is always there, Making things crisp and clear.

DON'T

By : Muskan Hashim (1st Year)

Don’t buy that lottery ticket
Don’t wish for a fallen wicket

Don’t wish to “make it” in a dying world
Don’t wish for either a boy or a girl

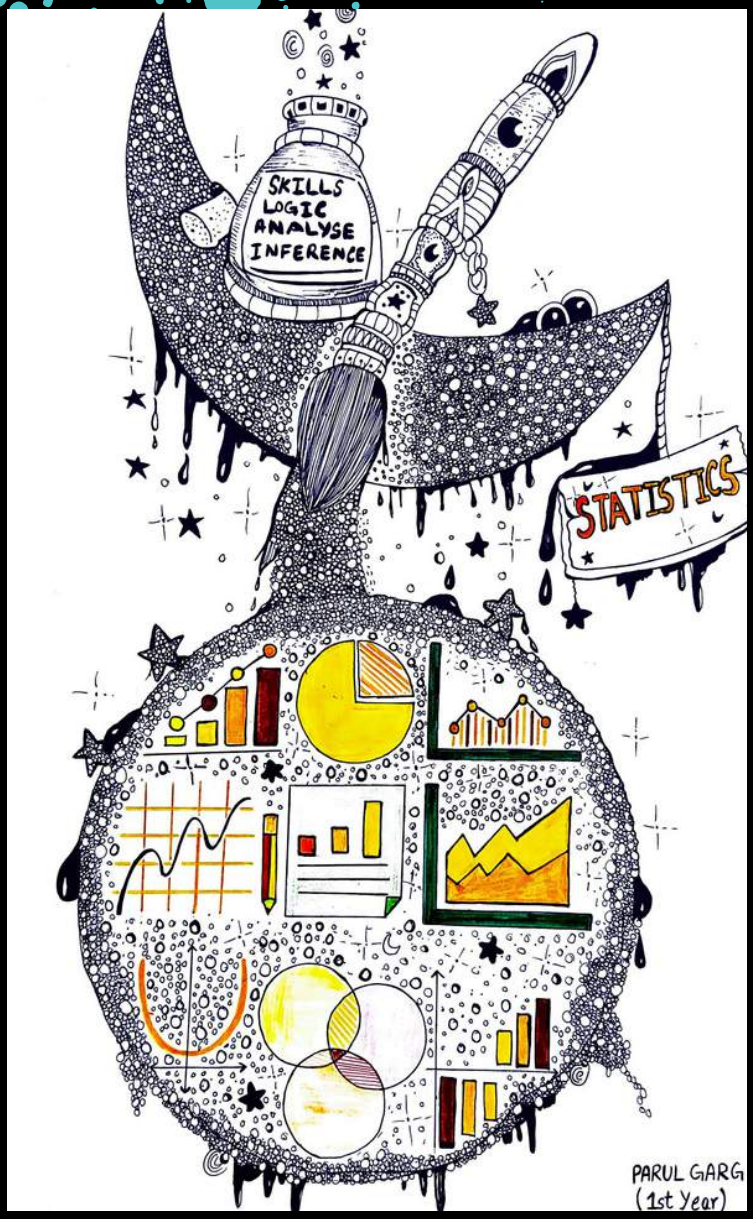
Don’t predict vivid sunshine, or, rain
Don’t bother to cry, or, complain

Statistically speaking, it may all be in vain
If you didn’t make it the first time, why try again?

And if you don’t buy, wish, try, and predict,
Why also bother living the life you claim to have lived

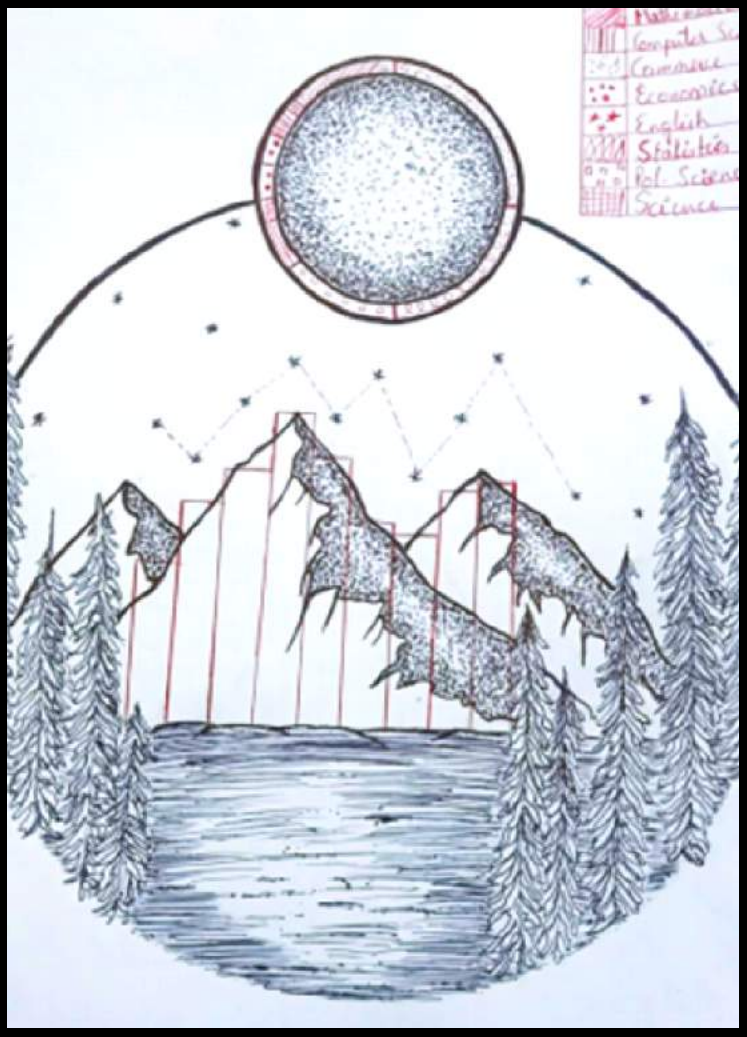

ART
IS
TRY

By pouring the magical ink of logic, skills and intelligence, we can analyse (paint) the data and draw conclusions from it which keeps us informed about what is happening in the world around us and how can we make this world a better place to live in.

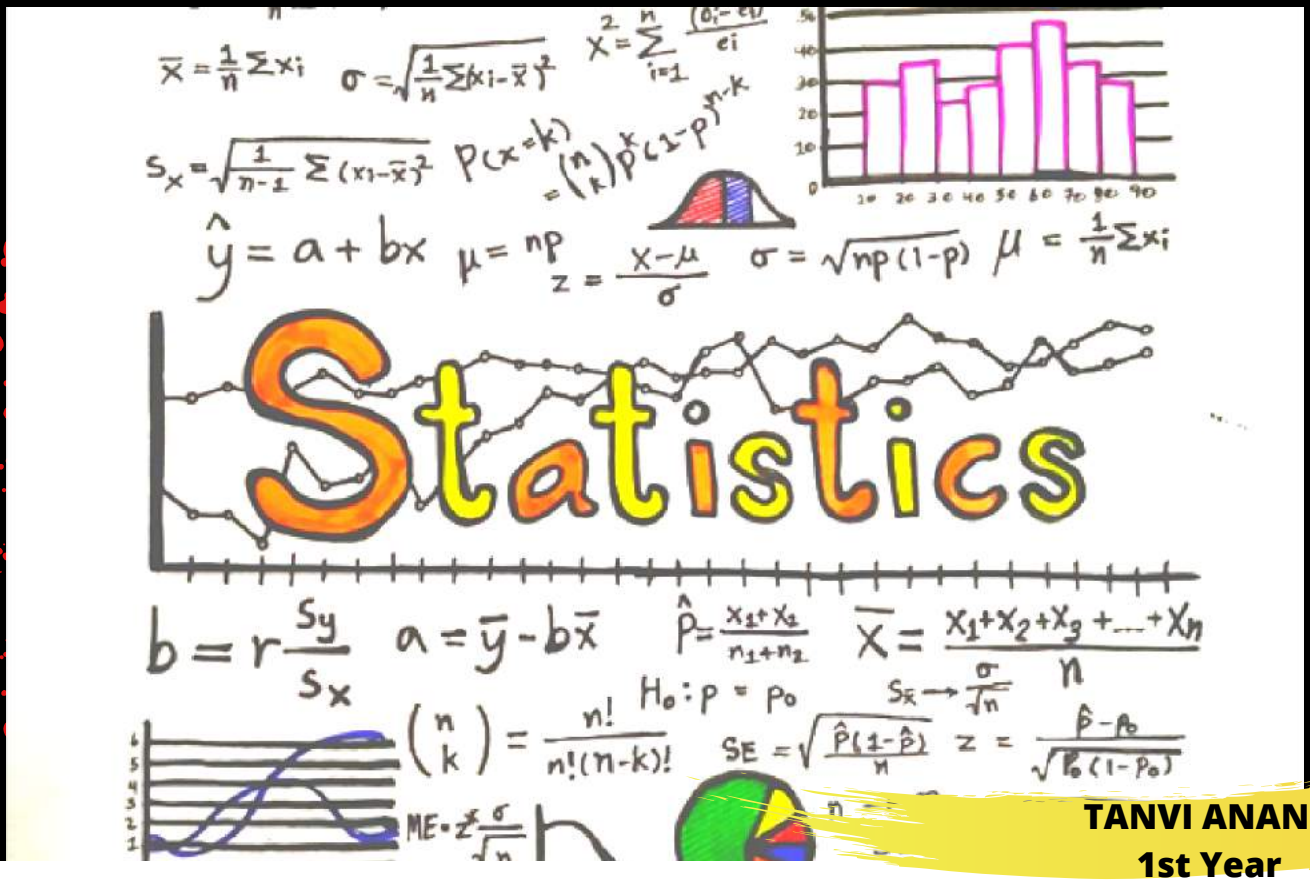


PARUL GARG
1st Year

Here, the Statistics(red colour) is being fused in Nature(black colour).The Bar graph in the art shows the relationship among increase in population and emission of carbon monoxide and ozone depletion. And by joining the mid points of bars, we get the Frequency Polygon(Mountains).First the Scatter Plot and then an Ogive is drawn(Stars). The Pie Chart(Moon) is showing the literacy rate of different Subjects. Hence, "Statistics is Pervasive" and fusion of Statistics in nature(in form of art) justifies this statement.



MEHAK PREET KAUR
2nd Year



TANVI ANAND
1st Year

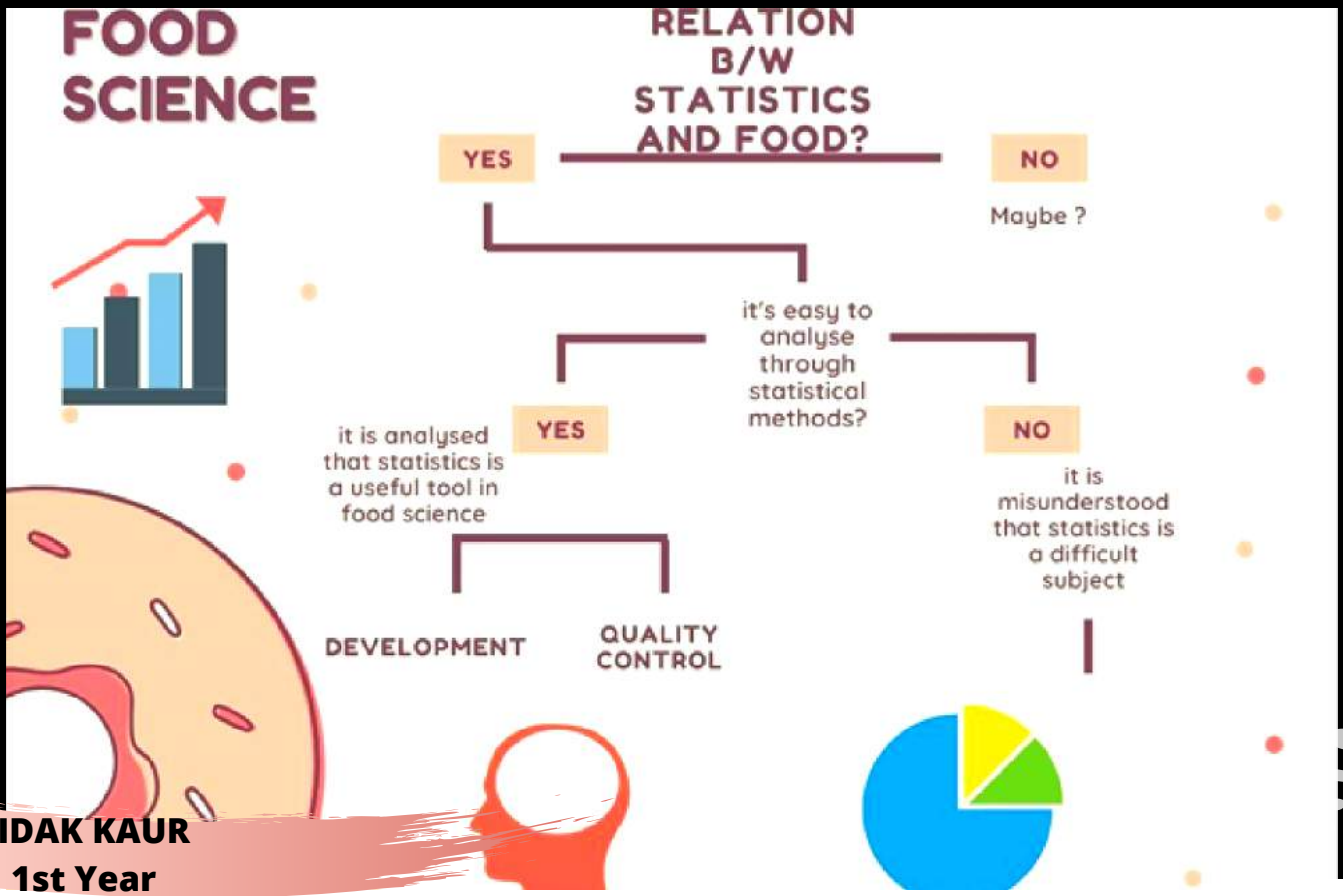
Consider statistics as a problem-solving process and examine its four components: asking questions, collecting appropriate data, analyzing the data, and interpreting the results.

ANSHUL SHARMA
1st Year

BIRDS:-
If you want to fly,give up everything that weighs you down.

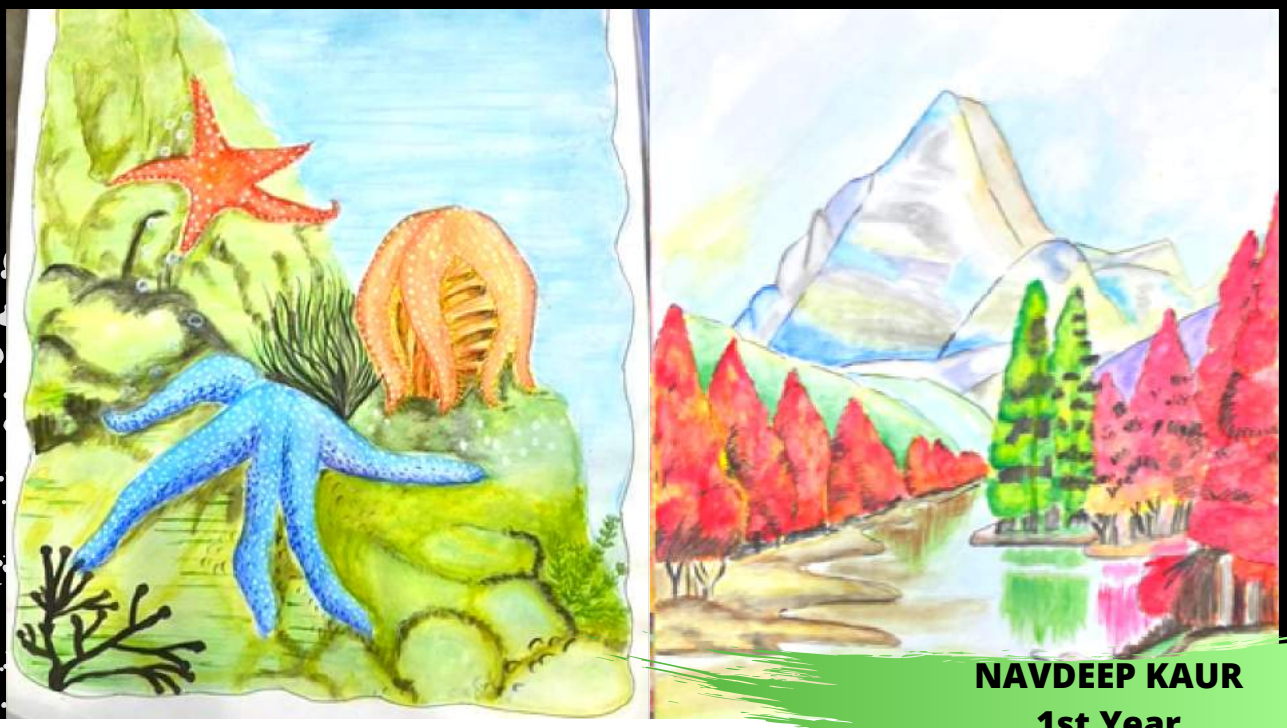
HARSHA GUPTA
1st Year

Statistics plays an important role in every field of human activity. It holds central position in almost every field like Biology, Mathematics, Agriculture , Astronomy, Banking, etc. Application of Statistics is very wide in n these fields.



SIDAK KAUR
1st Year

Statistical methods are applied to study food processing, sensory control, quality control,etc. There is a misunderstanding that statistics is a difficult subject. But in food science(study of chemical and physical properties of food) statistics is a very useful tool as it covers product development, food quality control and food sensory analysis. So statistics has emerged as a very useful element in case of food science.



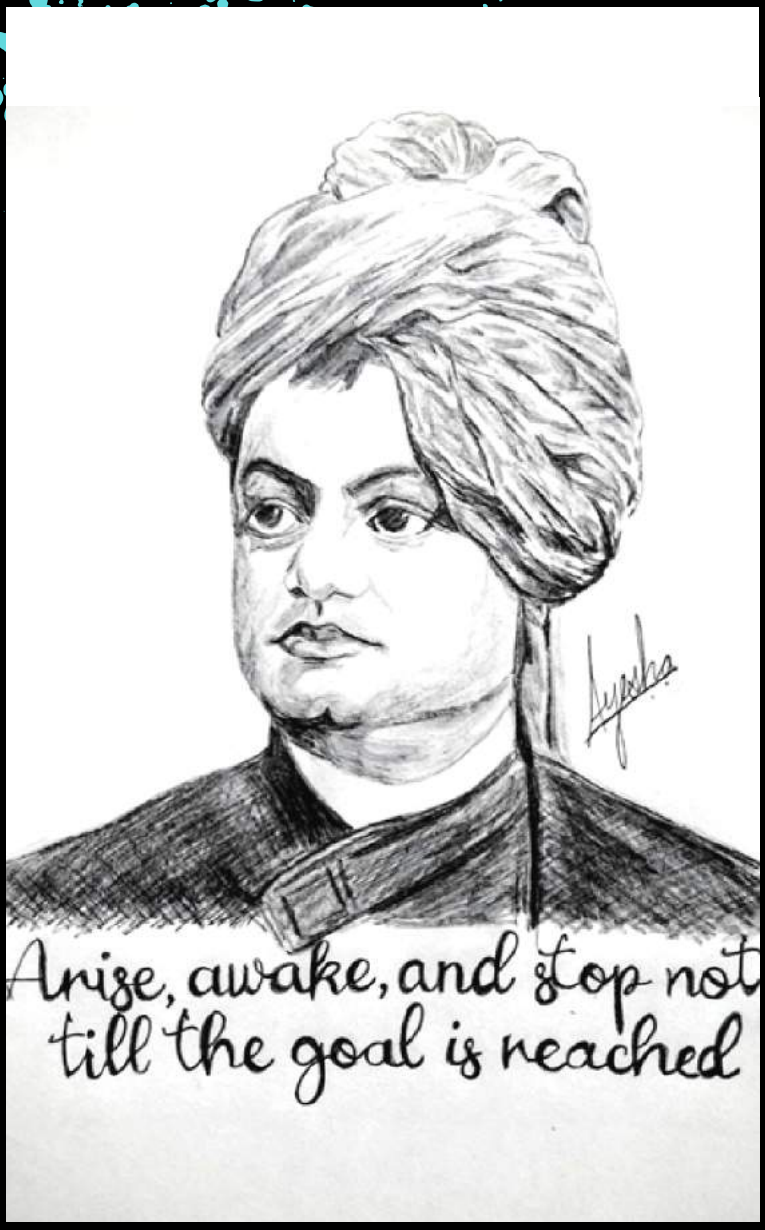
NAVDEEP KAUR
1st Year

The above pictures clearly depicts the beauty, versatility and diversity of nature. Nature is eternal, incessant and ceaseless. The Almighty lives in huge mountains and dwells in sea corals and sea plants. The power of nature cannot be determined by human minds. This picture celebrates nature and depicts nature's diverseness through the blue ocean and plants.

SHIKSHA SINGH
2nd Year

To me one of the most important part of statistics and further data science is how you present or visualise your data.Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, data visualization tools provide an accessible way to see and understand trends and patterns in data. My art work shows how statistician visualise complex algorithm into simple charts.

Never say 'NO', never say, 'I cannot', for you are infinite.
All the power is within you.
You can do anything.



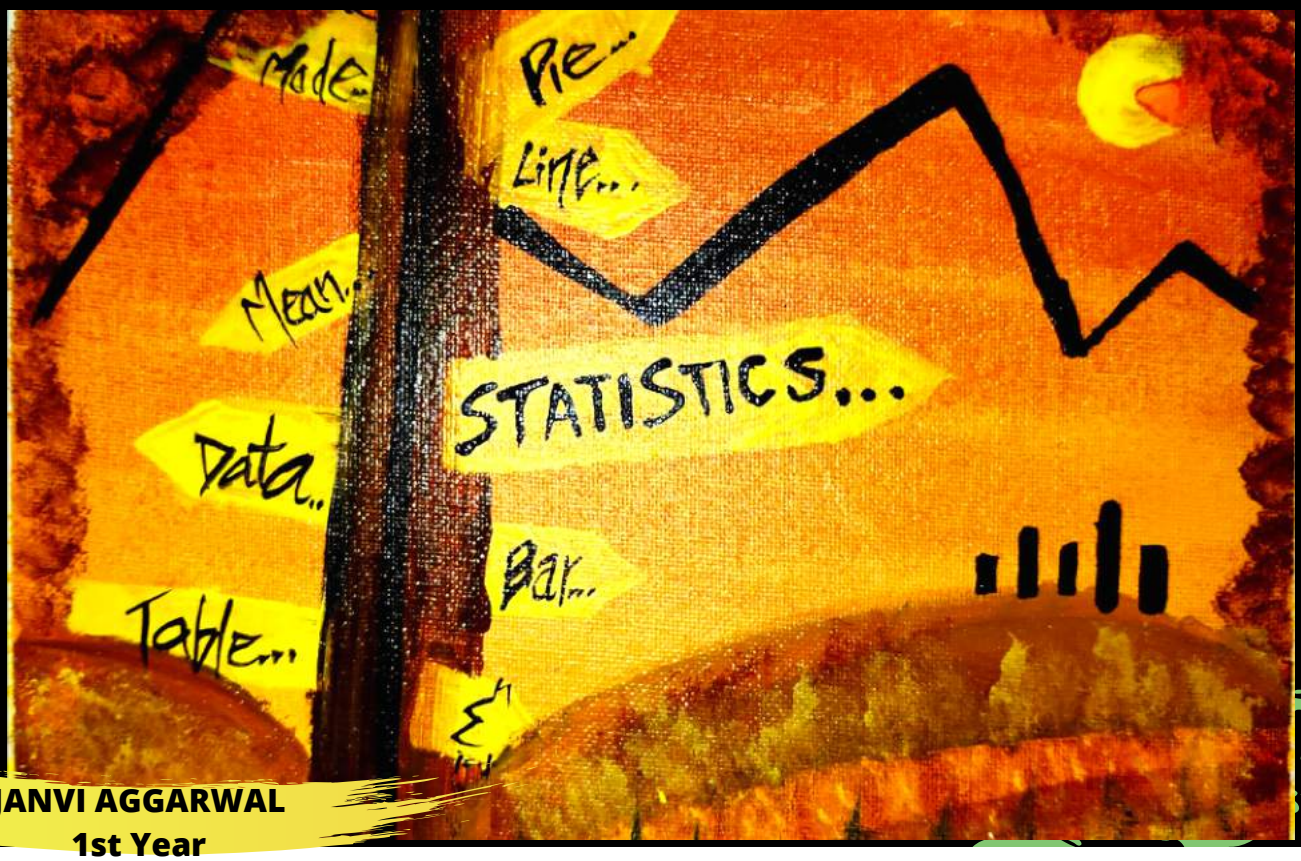
AYESHA RAHIL
1st Year

The art describes about modernizing the statistics in advancing world. With the world moving towards robots. Statistics will be fully performed by humanoids (human + robot combination).

BHAVYA WALECHA
2nd Year

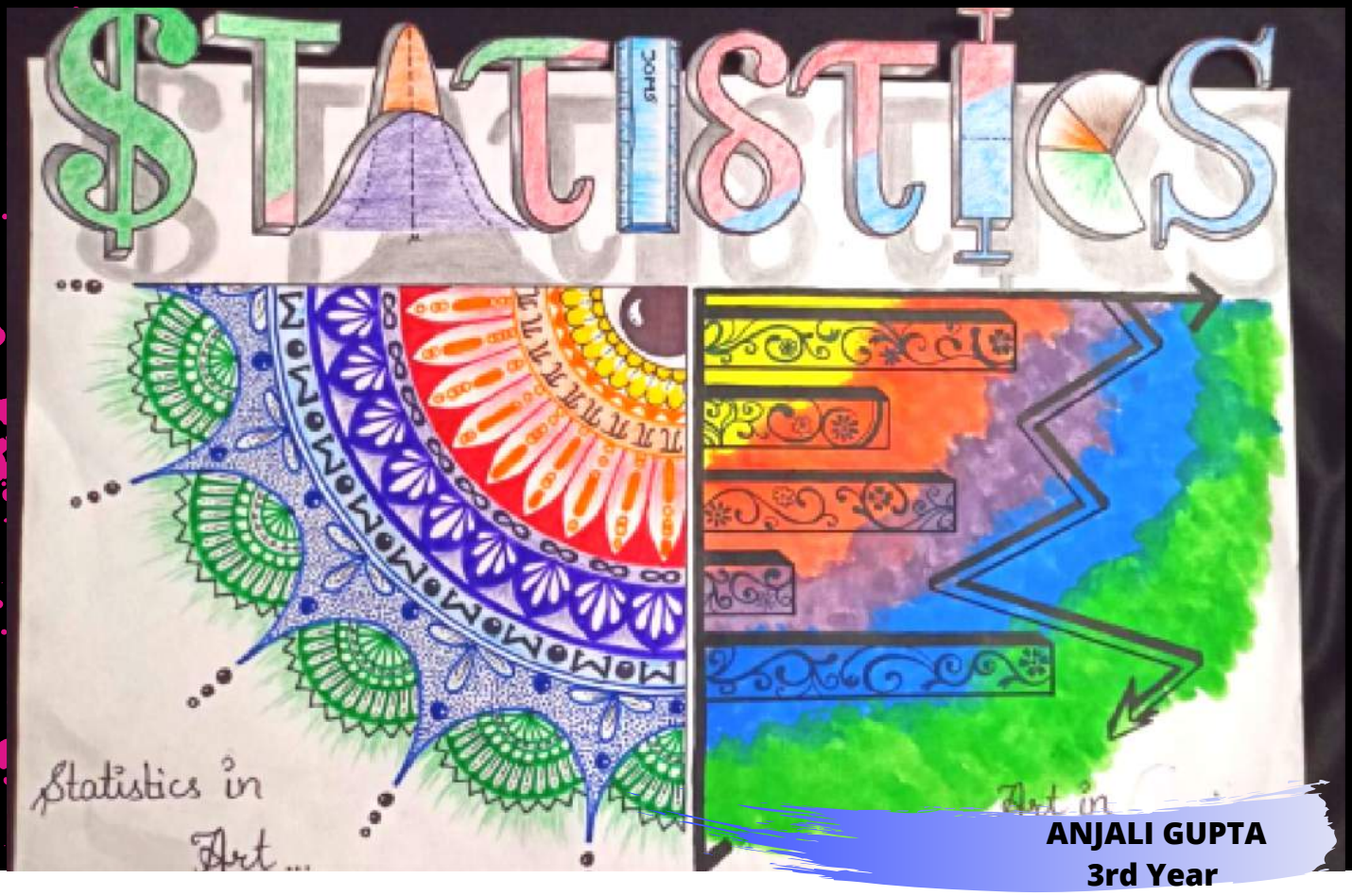
ANSHUL SHARMA
1st Year

COUPLE:-
Prem ka arth kisiko paana nahi hai kintu usme kho jaana hota hai



JANVI AGGARWAL
1st Year

Statistics is the discipline that concerns the collection, organization, analysis, interpretation, and presentation of data which can be done by using various graphs and charts depicted in this art. Its all about data and its analysis.



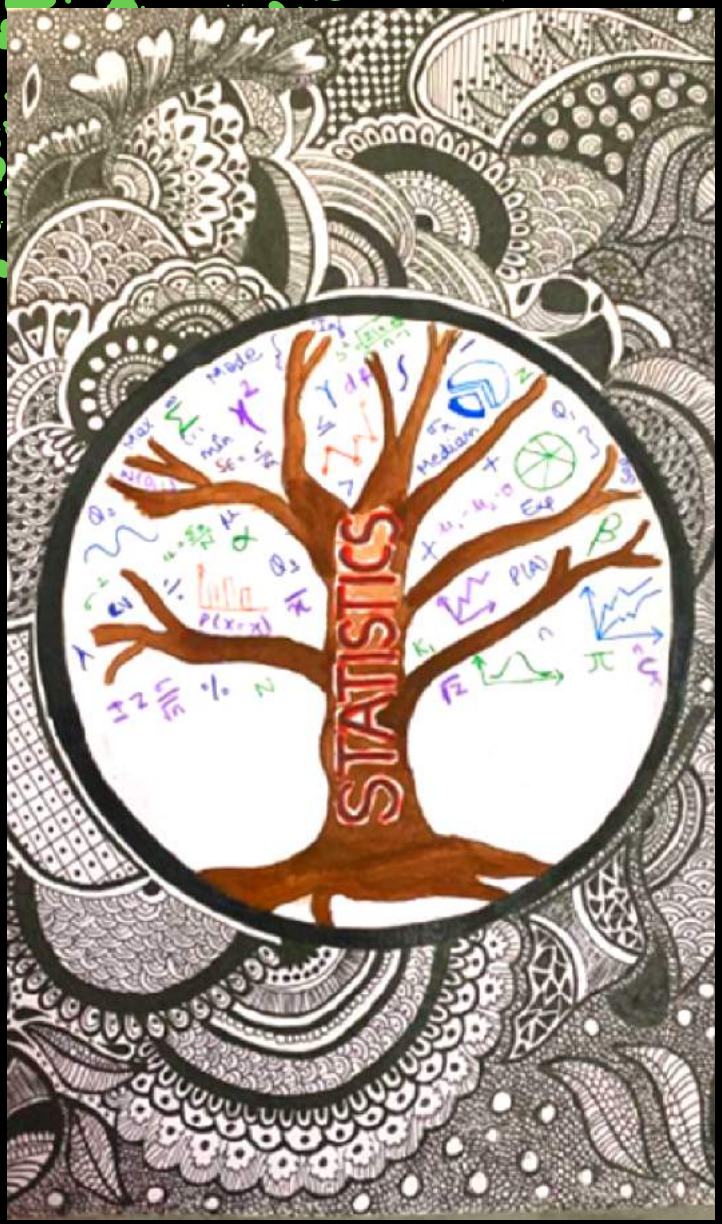
ANJALI GUPTA
3rd Year

1. Statistics in calligraphy
2. Mandala art (statistics in art with some symbols)
3. Bar graph (art in statistics)

VANI TIWARI
3rd Year

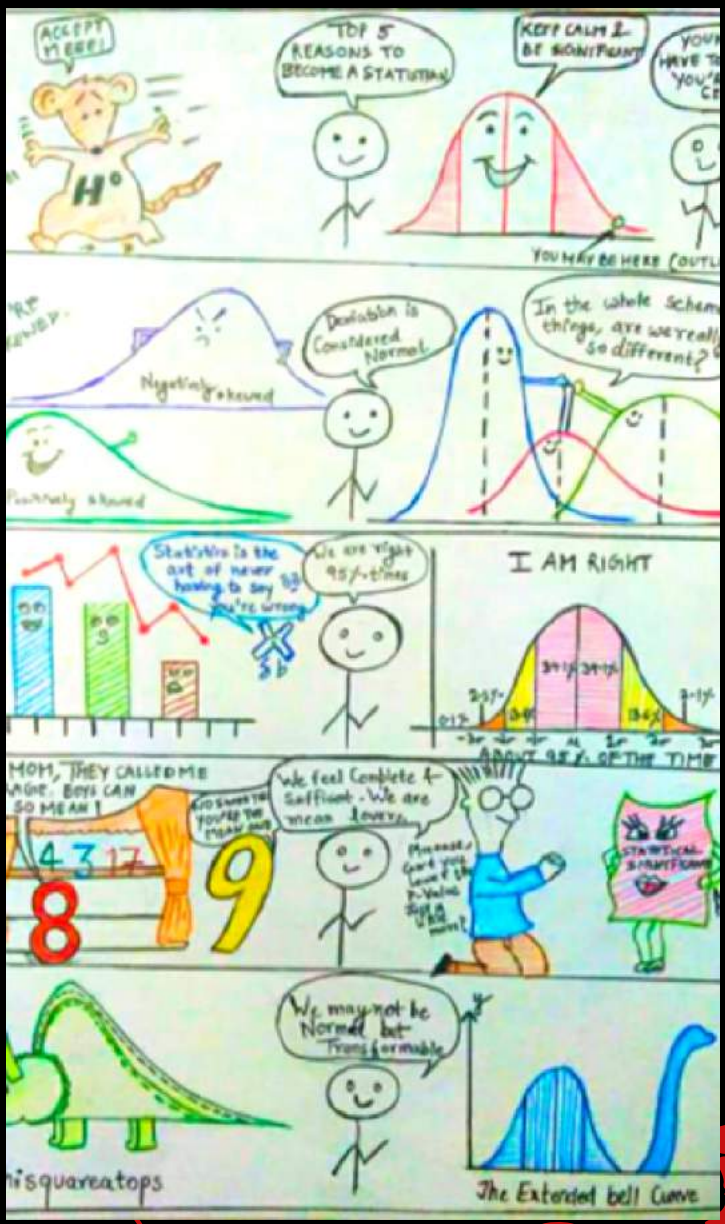
Through this art of mine, I want to represent a mixture of ancient art like mandala with the modern art like word doodle. Including the symbols and formulas used in statistics in the modern doodle part

Statistics : the kind you look up and the kind you make up.
By the fusion of zentangle and mandala art I tried to depict how statistics grows from a sampling to a huge tree and symbolically fuse in our day to day life.



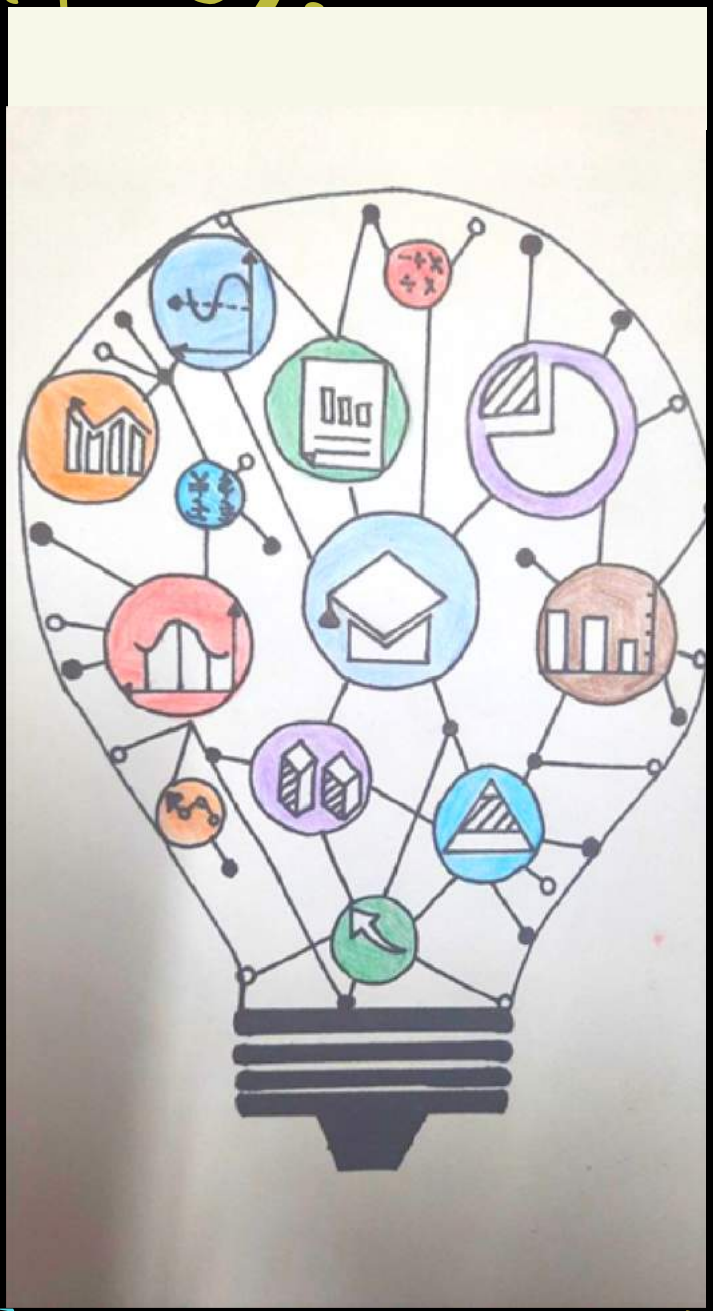
KHYATI MITTAL
2nd Year

This art is full of various comics on statisticians.Its great to learn statistics and it will definitely be amazing job in the future. The theme here "the top 5 reasons to become a statistician" is illustrated with jokes fused with art .



VANSHIKA BANSAL
3rd Year

Statistics means playing with data. Data matters more than opinion in everything.

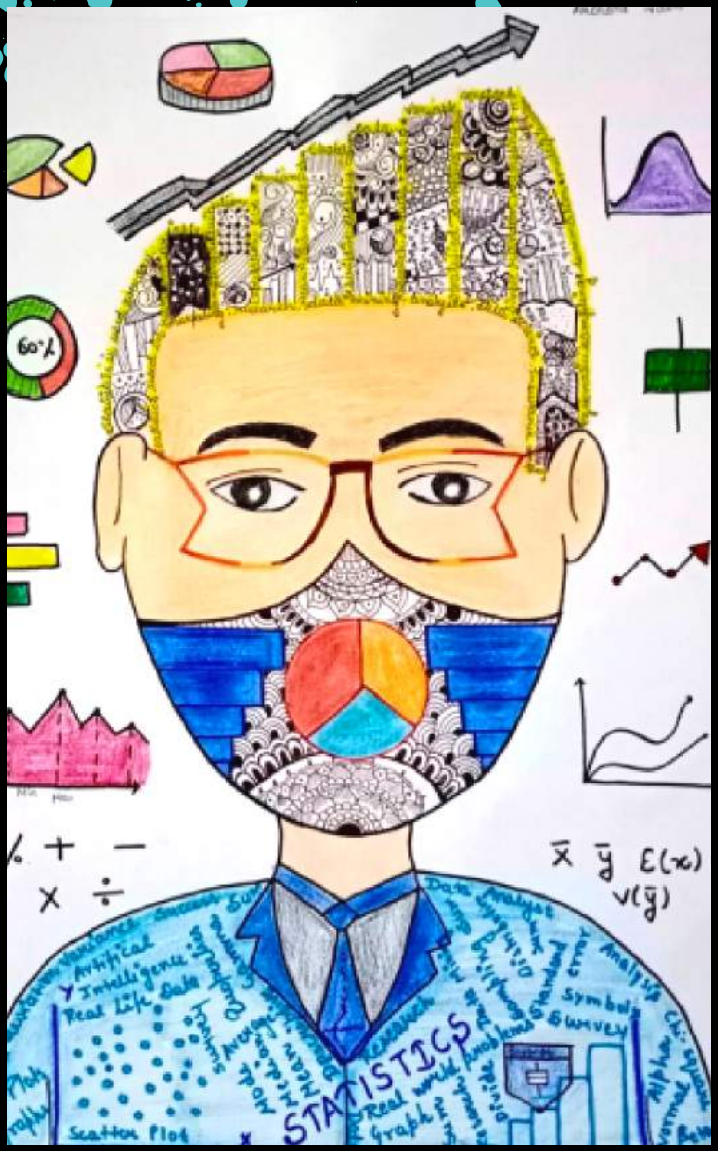


ISHITA SINDHWANI
1st Year

GURU:-
Let no man in the world live in delusion.without a Guru none can cross over to the other shore.

ANSHUL SHARMA
1st Year

My goal for this painting was to fuse zentangle art with visual textures like statistical words, graphs, symbols and equation. I want viewers to feel like there is a lot of data in our head and we need statistics to figure out how to put this information to use.



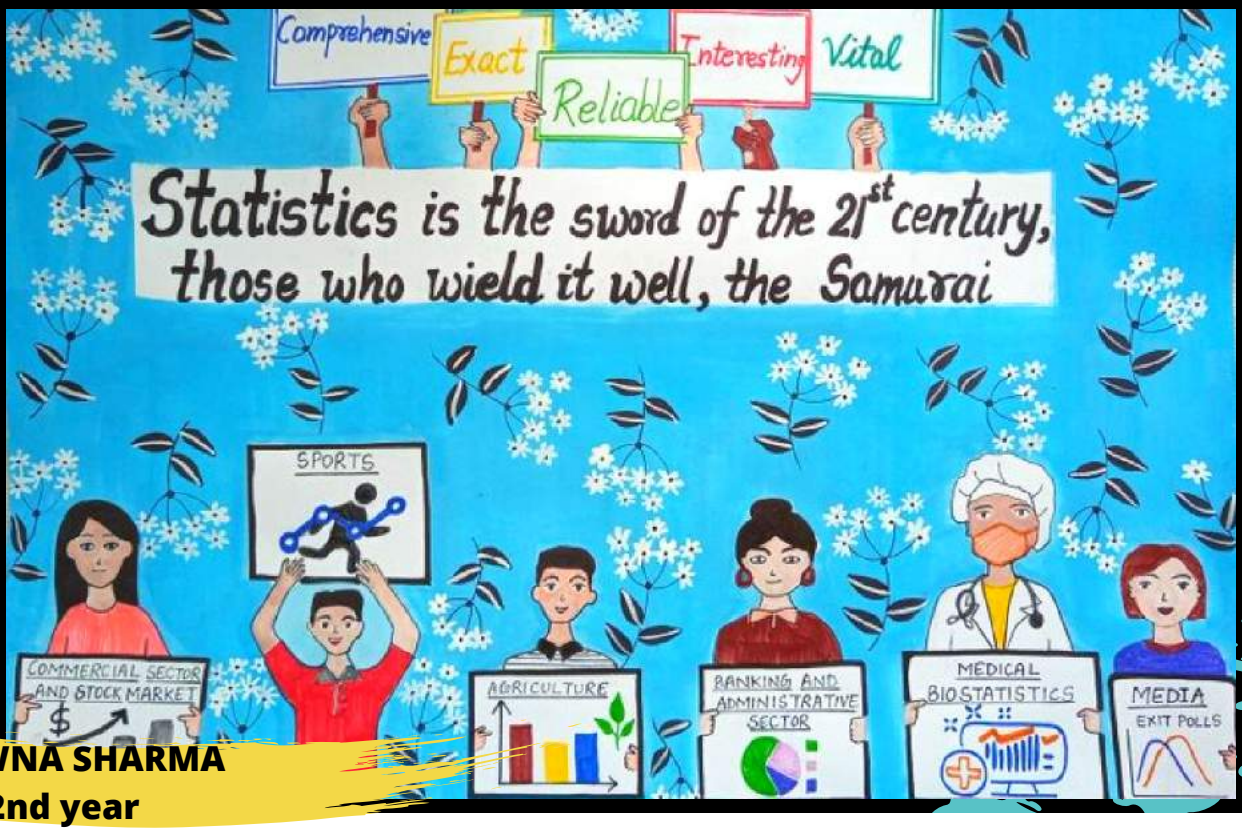
ARCHANA JAIN
2nd Year

GANESHJI:-
May Ganpati Bappa shower you with good health,wealth,peace and joy.

ANSHUL SHARMA
1st Year

ALISHA MANKU
3rd Year

Fuse Statistics in art, when this topic got decided I was so confused what to draw and suddenly I saw my hand which clearly showed line graphs and bar graphs. It's interesting how all the analytical concepts can be found within nature. Looking at my hand and how all the lines resemble that of graphs made me realise that Statistics is an Art indeed.



BHAWNA SHARMA
2nd year

Statistical Doodle
Fusion of floral doodling with the elements of statistics in it. Tried depicting how pervasive and vast statistics is.


STUDENT
ZONE

Harsees Kaur

It always seems impossible until it is done.

Yukta Kataria

If it makes you happy,it doesn't have to make sense to others!

Jahnvi Chawla

When you can't find the sunshine, be the sunshine.

Aastha Joshi

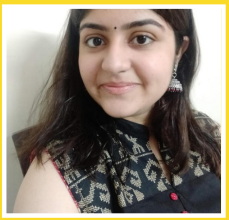
Either you run the day, or let the day run you.

Diksha Hans

When you focus on the good, the good gets better..

Nishita Gupta

It takes the same energy to worry as it does to be positive so use your energy to think positive and positive things will happen.



Suhani Vadhera

The one thing that doesn't abide by majority rule is a person's conscience.

Pakhi Malhotra

Make happiness a priority and be gentle with yourself in the process.

Tarushi Aggarwal

College, the best start to unfold life's beauty.

Tanisha Gupta

Goodbye to the mistakes we've made, remember the laughs we've shared !! Will never forget these years.

Nishita Virmani

People are capable at anytime in their lives of doing what they dream of.

Nehal Dixit

Stop measuring your degree of productivity and replace it by degree of presence.

Batch 2018-21

Prarthna Kohli

Be who you are and say what you feel, because in the end those who matter don't mind. and those who mind don't matter.

Parneet Kaur

Conquer yourself not the world, once you succeed in doing it, the world will be all yours.

Harshika Tyagi

Having charismatic, and vibrant self is key to happiness, optimism, and being systematic, is a way to success.

Kaushiki Parihar

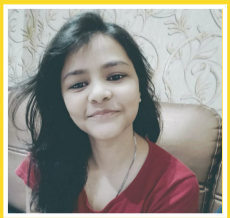
When it rains look for rainbows, when its dark look for stars.

Vanshita Garg

Believe you can and you're halfway there.

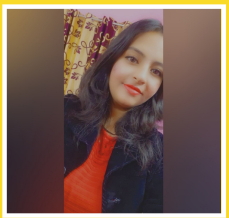
Vanshika Bansal

Fall in love with the process of becoming the very best version of yourself.



Umang Singhal

If people are trying to pull you down , then you are already better than them . Just focus on your energies and keep doing your best. You will find happiness :)
One more thing, IF YOU DON'T BET,YOU CAN'T WIN

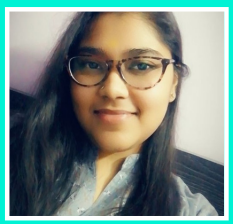


Nistha Tagra

Rise above the storm and you will find sunshine!

Rajyashree Vatsal

Do not change the path in front of your dreams, whatever happens, do not break those dreams in your mind. You will find difficulties on every step, but do not leave the ground just to choose the stars.

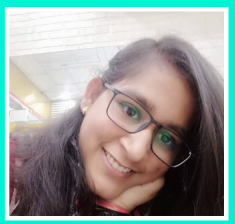


Anjali Gupta

Experiment : College life...
Null hypothesis : College life is amazing and memorable...
Alternative hypothesis : College life is difficult and stressful...

Vani Tiwari

Test Statistics : Given the observations for three years and some crazy friends, the p value of Ho being true is found to be greater than alpha ...
For all alpha level of laughters and fun, we fail to reject null hypothesis...



Varnika Vasisth

Conclusion : Therefore, we conclude that college life is amazing, full of adventures with a lot of new things to learn and can be made memorable with a few but real friends....
So make friends and don't give up... there is a lot more you can achieve in your life ahead.....

Batch 2018-21

Alisha Manku

The way to success holds a path of fight, and I'm sure to get it because look on the right →

Sampada Kapur

They say the right hand is always powerful but so is my the one on the left ←

Divya

Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma – which is living with the results of other people's thinking.

WE WILL SEE YOU IN THE FORBES 30 UNDER 30 LIST AND IN THE FORTUNE TOP 100 LIST

Payal Gupta

I know that I will look back on these days as being the happiest of my life.

Prekshi Singhal

Sometimes you will never know the value of a moment until it becomes a memory.

Saloni Garg

Enjoyed college a lot, it lasted almost as long as the lunch breaks!

Smriti Ojha

And that's a wrap on a degree where I acted like I knew what I was doing!

Batch 2018-21

Aditi Chitranshi

May every sunrise bring you hope. May every sunset bring you peace.

Himanshi Garg

If you don't believe in yourself, then no one is going to believe in you. So, Believe in Yourself!

Gourisha Narang

Be who you are and say what you feel, because those who mind don't matter, and those who matter don't mind.

Hrishita Suresh

Success is liking yourself, liking what you do, and liking how you do it.

Jasleen Kaur

Happiness is a by-product of an effort to make someone else happy.

Vanshika Bansal

If you are not willing to risk the unusual, you will have to settle for the ordinary.

Aayushi

Always keep it clean, simple and precise!

Varsha Srivastava

Hustle until you no longer have to introduce yourself.

Bhawna Sharma

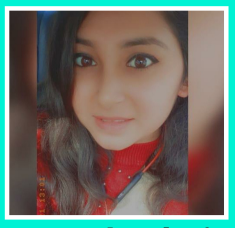
Dream it. Wish it. Do it.

Khyati Mittal

There are no limits to what you can accomplish, except the limits you place on your own thinking.

Ridhi Taneja

The greatness of humanity is not in being human but in being humane.



Sampda Ahuja

You will be exactly as happy as you decide.

Batch 2019-22

Suman Rawat

One thing to learn from the sun is that whenever a cloud tries to hinder its light, it finds its own path to shine!

Deepika Bisht

Excellence is not achieved - it is aspired to, and trekked towards. The tougher the trek, the better the views.

Mehak Preet Kaur

I think the day we figure out everything about our lives is the day we die.

Jessica Kaur

Finding your magic can be scary but owning it will be EUPHORIA.

Jaspreet Kaur

An approximate answer to the right problem is worth a good deal more than an exact answer to an approximate problem..

Prakriti Bhatt

Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time.

Shreya Wahi

The aim is to live happily, heal through every situation and learn everything new with every step taken.

Anjali Upahyay

Believe in progress not perfection.

Simran Kaur

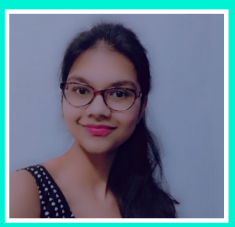
Every moment is a fresh beginning.

Payal

Small steps in the right direction can turn out to be the biggest steps of your life.

Swathy Sajeev

If you have only one smile in you, give it to the people you love.



Sidhika Jain

If you are working on something that you really care about, you don't have to be pushed. The vision pulls you.

Batch 2019-22

Archana Jain

You are the artist of your life, don't give the paintbrush to anyone else.

Shiksha

We are here for a good time not a long time.

Tanya Bahl

Life is not going to go your way. You have to go your way and take life with YOU.

Bhavya Walecha

There are two types of people in the world: Artist - Who creates and Art - that is created. Be Both ! :)

Manvi Chawla

The way i see it, If you want the Rainbow, you gotta put up with Rain.

Gurleen Kaur

Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time.

The larger the sample size (n) the more confident you can be that your sample mean is a good representation of the population mean. In other words, the "n" justifies the means.

Batch 2019-22

Aishwarya Gaba

Set your heart free and let your spirit fly, break the barriers and you shall soar high.

Akanksha Goel

You can regret a lot of things but can never regret being kind.

Anshul Sharma

You are the artist of your life, do not give the paintbrush to someone else.

Cheshta Garg

You gotta find the good in them because they'll always find the good in you.

Davleen Kaur

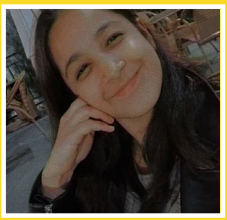
Every revolution was first a thought in one man's mind.

Drishti Arora

There are no limits to what you can accomplish except the limits you place on your own thinking.

Gagandeep Kaur

Be someone no one can think you could ever be.



Harleen Kaur

Always remember, you are bigger than your problems.

Harneet Kaur

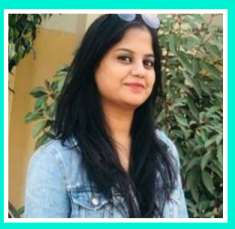
Working to change my signature into autograph.

Harsha Gupta

She discovered that she was fierce and strong, and full of fire, even she couldn't hold herself back, her optimism burned brighter than her fears.

Ishita Sindhwani

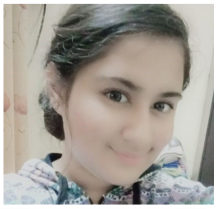
All the miracles in your life, will all be created by you!



Janvi Aggarwal

Each time a woman stands up for herself, without knowing it possibly, without claiming it, she stands up for all women.

Batch 2020-23

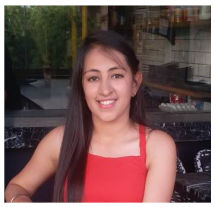


Jasleen Kaur

Be patient with yourself. Nothing in nature blooms all year.

Jiya Mendiratta

Keep calm and be crazy. Laugh, love and live it up because this is the oldest you've been and the youngest you'll ever be again.



Kawal Kaur

Life, love, and happiness. I wanna experience it all.

Nandini Karmakar

Not how long, but how well you lived is the main thing.

Navdeep Kaur

Either write something worth reading or do something worth writing.

Parul Garg

Believe you can and you are halfway there.

Poorvi Kapoor

You start seeing the magic and beauty in others, when it's really in yourself.

Rashmi Ojha

I'm not great at advice, can I interest you with a sarcastic comment?

Saloni Jain

Hope is the only bee that can make honey without flowers.

Shruti Sharma

Priorities change and so do we.

Sidak Kaur

Your limitation-its only your imagination.

Tanvi Anand

Being strong when everything going wrong. Believing that happiness relates to prettiness. Believing that tomorrow is another day, I believe in miracles.

Batch 2020-23

YEARBOOK 2020-21

Vanshika Mishra

किरदारों में उलझा, उलझा जग सारा,
गर्दिश में चमके वो टूटा तारा...

Vrinda Sharma

We're all figuring it out as we go.

Ananya Khanduri

I now understand why all the movies were about high school.

Ankita Bhandari

Live the life you love and love the life you live!!

Arushi Sharma

And yet there's so much to be grateful for and so much love to give.

Ayesha Rahil Ahmed

Your life is a canvas, make sure you paint a masterpiece!

Chhavi Kainth

Absence is presence with a distance.

Kumud Sharma

It is better to live your destiny imperfectly than to live an imitation of somebody else's life with perfection

Mrigakshi Khajuria

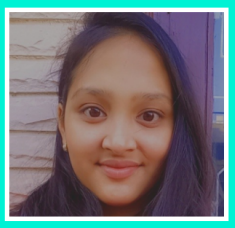
You don't have to control your thoughts. You just have to stop letting them control you.

Muskan Hashim

The Office, Season 7, Episode 19, 14:45

Palak Khaturia

Your life is your story and the adventure ahead of you is the journey to fulfill your purpose and potential.



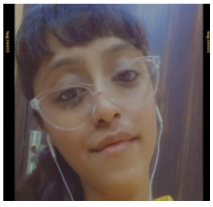
Sanjana Jain

Believe in yourself and you can win it all coz self love is the best love.

Batch 2020-23

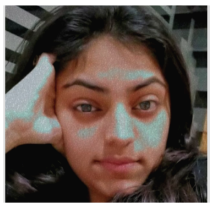
Yashika Jain

Your energy introduces you even before you speak.



Gunjan Grover

Your mistake don't define your character. It's what you do after you make mistake that makes all the difference.



Khyati Suchchal

"That's What"
~She

Shreya Jain

Life is what passes by while you are busy making other plans.

Hema Gupta

Let us be grateful to people who make us happy, they are the charming gardeners who make our souls blossom.

Jagriti Suneja

Confidence is not substitute for clarity, to be successful you need clarity not confidence..

Suniti Gupta

All I want is to have the world dominated by women.
Because men will not leave their position, so why will we demand equality.

Harshita Joshi

Be who you are and say what you feel, because those who mind don't matter, and those who matter don't mind."

Ritika Sundrani

No matter how tough may seem the climb,
Keep moving, Keep fighting.
Perseverance and patience go a long way
Because for the sunrise, even the longest nights make way.

Mansi Mohindru

Attitude is a little thing that makes a big difference.

Batch 2020-23

LET'S TALK STATISTICS

Faculty Strength

Class Strength

The Statistics Department in this college was introduced in the year 2017 and since then we have seen it flourish. Given is the data of the number of teachers and students admitted in every year.

ALUMNI SPEAKS

Geetika Papreja
PRESIDENT 2019-20

Its been a privilege to be the leading batch of the Department of Statistics, Mata Sundri College. None less than a roller coaster, with every new challenge we have rocked it on together. With the amazing faculty, it never felt like we needed the Seniors. . We have created our paths and won't let our juniors struggle for it, always there to their rescue!

I have been a part of the statistics society for all the years and have experienced the best of it. I see the society and the department growing which surely adds a feather to my cap.

Wishing for the best of it with all my heart.

I wish I could relive those best three years spent at the department with everyone in my batch and the teachers.

Good luck.

Mansi Jaiswal
UNIVERSITY TOPPER 2020

Sometimes the most beautiful things happen in the most unexpected ways. I still can't get over the fact that my 3 years-long and the beautiful journey came to an end. I never thought that I would make such beautiful bonds in college, be it with the teachers or my classmates.

Mata Sundri College will always have a special place in my heart and in my life. It is this place that made me realize my true potential. I entered the college with almost no expectations. But looking back at the time, I now feel that those years were the most special and the most beautiful ones. The kind of love and support I received from all the teachers cannot be described in words. The personal connection which I still have with my teachers would be missing had I been in some other college. I am extremely grateful to them. It was because of them that I started loving my subject Statistics. All the hard work put in by my teachers and by myself paid off in the end. Never did I imagine that I would become the University topper. I still feel that I am living in a dream.

It is one of my greatest accomplishments. Receiving the Medal from the Hon'ble Education Minister, Shri Ramesh Pokhriyal was a matter of pride. I feel so happy seeing my parents and teachers being proud of me. I surely know that whenever I'll need some help in the future, my teachers will always be there to guide me.

The only regret is that we didn't get a chance to greet the teachers and our fellow classmates one last time due to the pandemic. But keeping that aside, I will always cherish my journey. Thank you Mata Sundri College for the amazing experience.

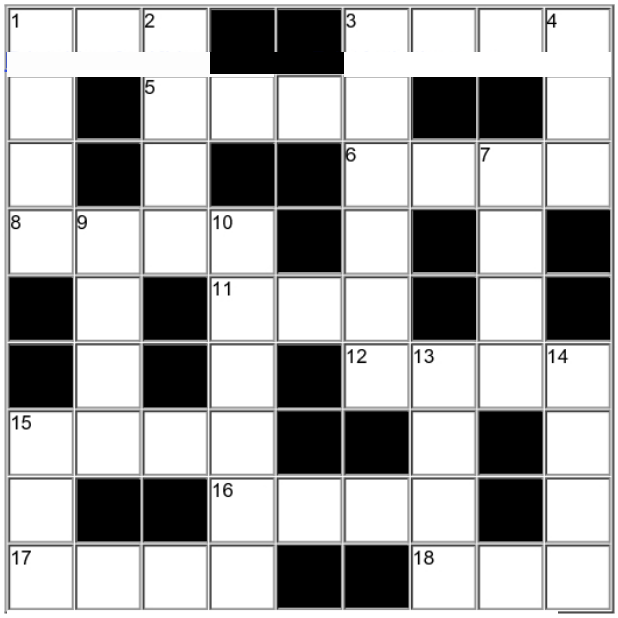
FUN ZONE

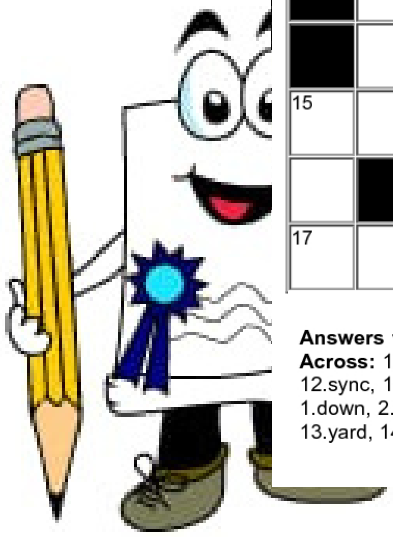
Lets Play

CROSSWORD

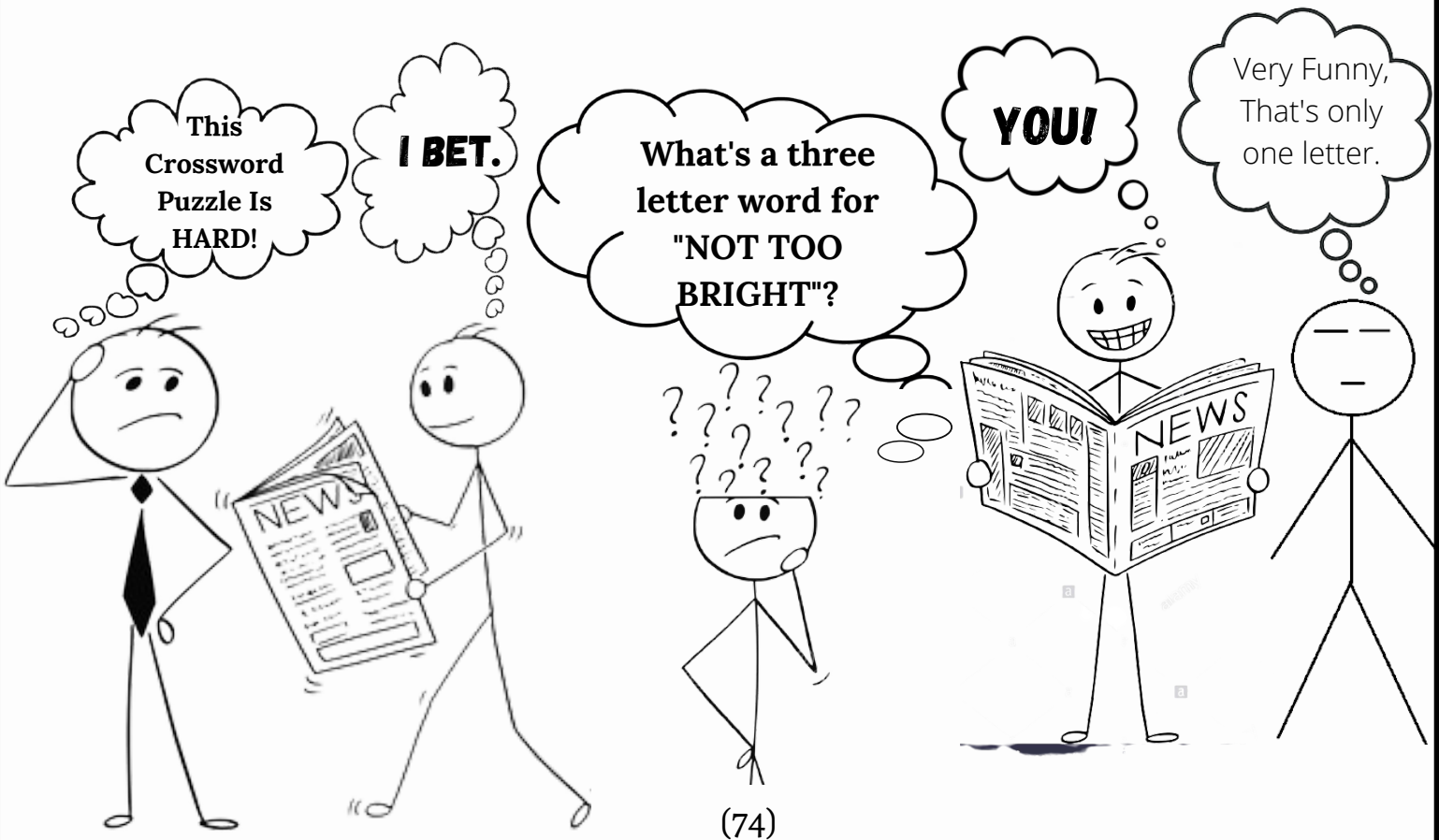
Across
1. Father
3. Cause to go
5. Not west
6. ____ bitsy spider
8. Maker of foam toys
11. Large boat, like Noah's
12. Create unison
15. Netting
16. At any time
17. Closeby
18. Had done

Down
1. Not up
2. Honey, sweethe
3. Smells bad
4. Not night
7. Amaze; make speechless
9. Slacken
10. Male parent
13. Land around a house
14. Ace, King or 8
15. Not a woman





Answers to 9x9 Crosswor
Across: 1.dad, 3.send, 5.east, 6.itsy, 8.nerf, 11.ark, 12.sync, 15.mesh, 16.ever, 17.near, 18.down **Down:** 1.down, 2.dear, 3.stinks, 4.day, 7.stun, 9.ease, 10.father, 13.yard, 14.card, 15.man



GUESS WHO AM I?

Ques 1: You go at red but stop at green. Who am I?

Ques 2: I have a head and a tail that will never meet. Having too many of me is always a treat. Who am I?

Ques 3: I shave everyday but my beard remains the same. What am I?

Ques 4: I'm where yesterday follows today and tomorrow is in the middle. What am I?

Ques 5: I can never be thrown but I can be caught. Ways to lose me are always being sought. What am I?

Ques 6: I have branches, but no fruit, trunk or leaves. What am I?

Ques 7: The more you take, the more you leave behind. What am I?

Ques 8: I have many teeth but I can't bite. I'm often used early but rarely at night. What am I?

ANSWERS

1.WATERMELON 2. COIN 3.BARBER 4. DICTIONARY 5. COLD 6.BANK 7. FOOTSTEPS 8.COMB

sankhyiki

Mata Sundri College for Women

UNIVERSITY OF DELHI

Mata Sundri Lane, New Delhi - 110002

@mscwdu

@ItsStatistics

matasundricollege.du@gmail.com

statistics@ms.du.ac.in

Compiled by Department of Statistics