

Proceedings of the Online Skill Development Programme - Exploring Analytics with R

Population Research Centre, Institute of Economic Growth, Delhi

Population Research Centre, Institute of Economic Growth conducted an online Skill Development Programme for academicians and scholars who are affiliated with the institute and the centre. The Online programme comprised of lessons for learning the R language, a data analysis tool that has garnered immense significance in the academic work. ‘Exploring Analytics with R’ consisted of lecture series spread across a period of 4 days, during May 21-24, 2020. Prof. Suresh Sharma was the prime facilitator for the same and the academic coordinator of the programme was Mr. Vinod Kumar Tyagi. Mr. Tyagi designed the course curriculum in a manner that was felt comprehensive yet comfortable for participants entering at the beginners level. A total of 170 people registered for attending the programme, of which, 100 people were eventually sent an invite to join the course. As mentioned earlier, the course was designed keeping in view that many of the participants were going to be the first time users of the R programme, and hence the lectures progressed from a basic understanding and introduction of R and concluded by touching some basic bits of machine learning. The contents of the course were also specific to the adaptability and suitability of social science researchers. We now discuss the details of the course by the timeline of the programme:

Day 1: Introduction to R Environment, Functions and Data-frames

The first day of the course programme began with a welcome note from Prof Suresh Sharma addressed to the participants of the programme. Prof. Sharma extended his gratitude to Sh. D.K. Ojha, DDG (Stat.), Ms. Pooja Verma Asstt. Director, MoHFW and Prof. Ajit Mishra, Director, IEG Delhi for their support and cooperation towards making enabling this activity. Mr. Vinod Kumar Tyagi, Senior Computer Administrator, IEG further introduced himself and welcomed the participants. Mr. Tyagi covered an array of topics during his first lecture. He began by making the participants feel at ease with the whole look of the R software, he emphasized that unlike many other data analysis softwares, R is a comprehensive programming language that deals with all aspects of data analysis. Hence, the term “environment” is intended to characterize R as a fully planned and coherent system, rather than an incremental accretion of very specific and inflexible tools. The lecture was delivered in two parts for all the four days of the programme. The first part constituted of Mr. Tyagi sharing his presentation on the days topic and revising the work done on the previous day, in the second part, Mr. Tyagi works on the R studio simultaneously with the participants and the programme coding is explained as executed. The lecture proceeded to introduce some basic commonly used functions, understanding the heterogeneous and homogenous nature of vectors, creating vectors, array data frames and matrices. The focal point of day 1 was to accommodate the user with the software and learn the style of R language required towards writing codes, and analyzing data.

Day 2: Working with Visualizations in R

The second day of the course programme focussed on Data Visualizations. Data visualization with R provides a powerful way to communicate a data-driven finding. The growing availability of informative datasets used by the academicians has led to increased reliance on data visualizations. Mr. Tyagi included in his lecture some very aesthetic data graphics, including bar plots, histograms, spatial maps, etc. Functions pertaining improving the aesthetics of the visualization like colour gradients, fonts, combinations, etc. were also extensively discussed. It was felt by the participants that using the R programme for such data visualizations would be welcome break from the conventional graph styles being used by academicians by far. Inculcating such graphics in research publications can clearly enhance the quality of work, providing string support to the follow-up analysis.

Day 3: Covid-19 propagation (A case study)

The day 2 of the programme dealt with a COVID -19 case study. A COVID-19 dataset of confirmed, recovered and dead cases was used to arrive at a geospaitial map specifying the spread and severity of the pandemic. This lecture essentially dealt with advanced data visualizations and was a comprehensive exercise in dealing with raw data, applying layers and facets to it, learning data mutation and arriving at Geo-Spatial aesthetic maps. It was a hands-on exercise and all participants solved the case study as was demonstrated by Mr. Tyagi. It was thus a very helpful, small end-to-end project that equipped the beginners with the syntax required towards solving such case problems.

Day 4: Induction of ML(A demo on “Training and Discovering”)

Day 4 was the last in the lecture series of the online programme. R provides a great platform to learn Machine Learning and the last lecture of the programme catered to a very specific problem in machine learning that can be easily carried out by academicians in their routine work. Mr. Tyagi covered aspects of ‘Training and Discovering’ on the final day. He presented the syntax to an analysis that can deem extremely beneficial for qualitative data analysis, particularly while doing meta-analysis, analyzing FGDs, etc.

The programme concluded with a vote of thanks by Prof. Suresh Sharma. Ms. Pooja Verma, MoHFW also joined and congratulated the participants on successfully completing the course programme. Participants reigned to thank Mr. Tyagi and Prof. Sharma for the rather informative lecture series. In a feedback round that followed, all participants extended their valuable views. Dr. Jyoti Hallad, PRC Dharwad conveyed that how the lecture series helped her familiarize with the R programme and that lessons from these 4 days have given her the confidence to pursue data analysis with R more extensively in the future. Dr. Dilip Kumar, Patna PRC also expressed his immense satisfaction with the course and its suitability for PRC personnel, as he affirmed that he will definitely inculcate takeaways from this programme towards future research studies.

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