

Original article:

The Word Cloud Analysis to Evaluate the Impact of COVID-19 on Environmental Professionals and Environmental Degree Holders: A PAN India Survey

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Abstract:

Background: In addition to its impact on public health, COVID-19 has had a major impact on the Indian economy and the employment and education on the field of environmental sciences and engineering. This survey study has a mission to focus on how COVID-19 affects PAN India employment and the likely impact on education on the different environmental fields.

Methodology: We have surveyed on PAN India basis by considering different working sectors on environmental field. In our survey, questionnaires circulated by email and different social media like Facebook, WhatsApp and their opinion have been analyzed by analyzing the frequency of the words from their texts / Word Cloud Analysis. **Results and Conclusion:** This survey report convey highest frequency of the word “life”, “affecting”, “Covid”, “work” which is similar with “job”, “time” “day”, “home”, “very”, “lockdown” by all environmental professionals, students and researchers. This study suggests a need for more comprehensive and longitudinal evaluation of population needs, allowing the country to design holistic initiatives for affected people.

Keywords: COVID-19; Indian Context; Environmental Education; Environmental Employment, Environmental Degree Holders, Environmental Professionals.

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Introduction

A cluster of pneumonia incident was reported in the city of Wuhan, China, in the month of December, 2019. Some of the early cases of the transmission were reported to be started from seafood and live animal market in Wuhan^{1,2, 3, 4, and 5}. Since then COVID 19 has become a common and most feared disease in the present time. The World Health Organization declared the outbreak a Public Health Emergency of International Concern on January 30, 2020^{6, 7, and 8}. The impact of COVID-19 has been multiple and not only limited to the deterioration of health. This pandemic and associated lockdown has also made a devastating impact on society, education, economy and several other aspects of life⁹.

According to joint study of the World Health

Organization, International Labour Organization, Food and Agriculture Organization, International Fund for Agricultural Development around ten million people are at a risk of falling into extreme poverty⁵. As of October 13, 2020, the estimated numbers of undernourished people are around 690 million that is predicted to increase upto 132 million by the end of 2020^{10, 11}. According to UNICEF, more than one billion children are at risk of falling behind due to closure of educational institutions¹². The COVID-19 pandemic has created the largest disruption in the history of education systems, affecting nearly 1.6 billion students in more than 190 countries and all continents. This has definitely negative impacts on students all around the world.^{12, 13, 14, 15, 16, 17 and 18}.

The authors performed a general survey, intended to

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understand the point of view of University students, Research-scholars, Professors, Assistant Professors, Associate Professors, Engineers, Manager, Teacher and other various sectors regarding the impact of disruption of day to day activities as a result of complete lockdown in India.

In this study a Covid-19 response dataset collected from various location in India. The participants were University student, Research-scholar, Professor, Assistant Professor, Associate Professor, Engineer, Managers, Teacher and other Govt. and Non-Govt. sectors. The survey is made using Google Form containing most common question related to Covid-19, like How Covid-19 affecting your life?How Global Climate changes and Covid-19 interlinked?Share your opinion on current Scenario of Environmental Challenges and Opportunities? The present paper aim to analyze these datasets and conclude valid conclusion using various statistical tools.

Methodology of the Survey

Reaching out to the Participants

The survey was performed using online platform and social media. A set of questionnaire was created as Google Form and shared with various University students, Research-scholars, Professors, Engineers, Management Professionals, Teachers and Servicemen belonging to various Government and Non-Government sectors. The people shared their opinion using Facebook, Email, and Whatsapp.



Figure 1. (Different medium of data collection)

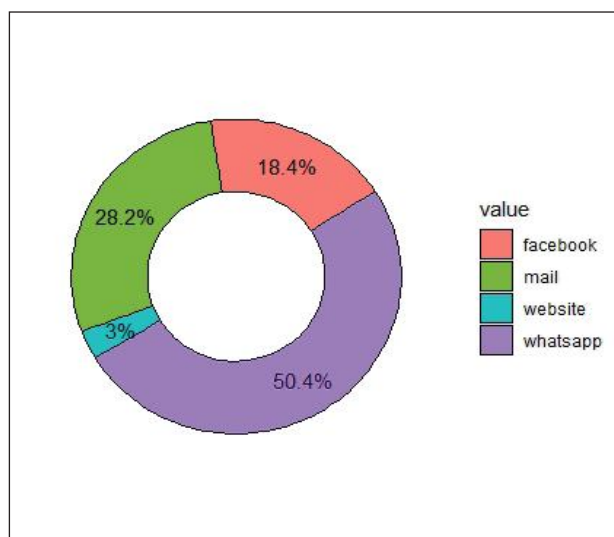


Figure 2 (Percentage of different medium chosen to answer)

The pie-chart shown as Figure 2, represents the percentage of the medium preferred for answering the questions. 50.4% people answered through Whatsapp, 28.2% through E.mail, 18.4% through Facebook and rest 3% through other websites.

Analysis of the Profession of the Participants

Profession of the participant is one of the important parameter of this analysis. Various profession persons opinion in this Covid-19 questions various. This bar-chart clearly shows the fill-up percentage of various profession persons. 23.3% students fill-up this and it's larger than others. Then 21.5% Research Scholar fill up this. 2.8%, 18.2% and 1.8% corresponding fill-up Professor, Assistant Professor and Associate Professor.

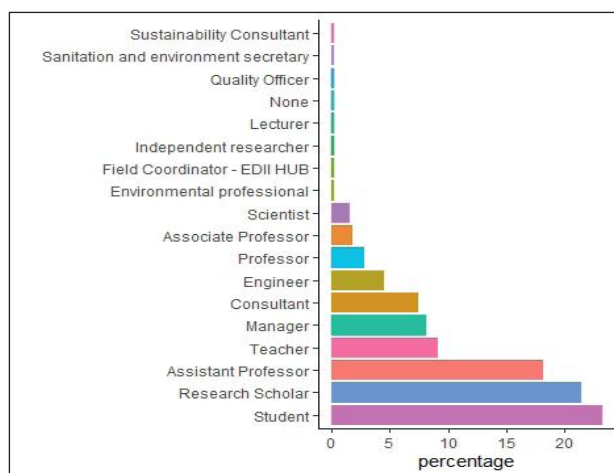


Figure 3 (Percentage of different professions in the survey)

Result and Discussion

How COVID 19 affecting your life?

The pandemic, Covid-19 is a pandemic, has created global disorientation.

This brings out one of the valid and most important question, i.e. how does this situation affect day to day life. People belonging to various profession shared their experience and perspectives, which are presented as word cloud, emphasizing the important words. Highlighted and bigger word shows most frequently used word while sharing opinion. And other small highlighted word shows the less frequently used ones.

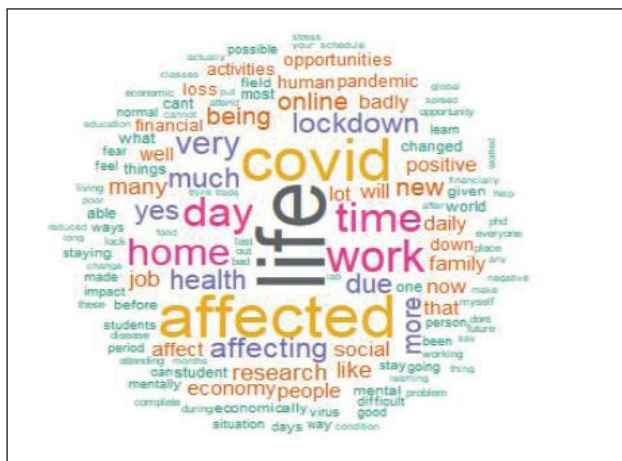


Figure 4. (Word Cloud Analysis of “How COVID 19 affecting your life?”)

This bar plot (figure 5) and word cloud analysis shows most frequently used words and their frequency (times of repetition). Here life, affecting, Covid, work, time, day, home, health, job, research, lockdown very frequently used. This words gives a pre-image about this question (How Covid-19 affecting your life).

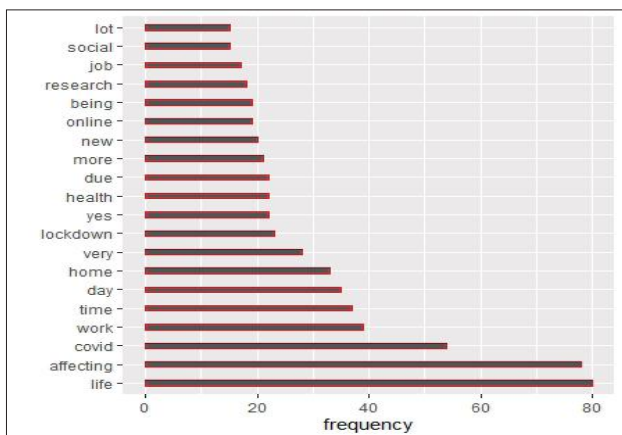


Figure 5. (Bar Plot Analysis of “How COVID 19 affecting your life?”)

Coefficient of variation:

For this text-analysis, length of text play very important role. How many letter a person used for answering a question.

Consistency gives better result than and education inconsistency. A set of response in a particular profession use approximately same number of letters for answer a particular question that imply consistency.

Large number of response gives better consistency this is not true, Coefficient of variation (cv) measure the consistency.

$$cv = \frac{sd(x)}{mean(x)} \times 100$$

$$\text{Where } mean(x) = \frac{1}{n} \sum_{i=1}^n x_i$$

$$sd(x) = \frac{1}{n} \sqrt{\sum(x_i - mean(x))^2}$$

cv is a relative measure and is most suitable for comparing two series. The smaller result of cv gives more consistent than the others.

Coefficient of variation (CV) measure the consistency

$$cv = \frac{sd(x)}{mean(x)} \times 100$$

Figure 6 clearly shows the mean, sd and cv. 64.2 is Professor cv and it is smaller than the others that imply professor consistency is best then the others. Similarly Manager, Associate Professor, Student, Scientist also good. Consultant cv is high (186.3) then the others it imply inconsistent. That means some Consultant use large numbers of letter and some are use few.

♣	Profession	letter	mean.letter	sd.letter	cv	♣
1	Assistant Professor	4632	62.6	75.8	121.1	
2	Associate Professor	523	65.4	62.8	96.0	
3	Consultant	3996	159.8	297.7	186.3	
4	Engineer	730	42.9	54.7	127.5	
5	Manager	783	34.0	29.8	87.6	
6	Professor	469	46.9	30.1	64.2	
7	Research Scholar	7449	99.3	130.4	131.3	
8	Scientist	710	118.3	123.5	104.4	
9	Student	7891	97.4	101.6	104.3	
10	Teacher	1956	54.3	70.9	130.6	

Figure 6. Mean, SD and CV of Profession

Assistant Professor

Highlighted and bigger word shows most frequently use word of sharing opinion. And other small



Figure 7. (Word Cloud Analysis of answers given by Assistant Professors against “How COVID 19 affecting your life?”)

Assistant Professors use more frequently life, economically, lockdown, home, Covid, different, human, people, problem, social, work, world. This words gives pre-images about the question how covis-19 affect in Assistant Professors life.

Students

Highlighted and bigger word shows most frequently use word of sharing opinion. And others small highlighted word shows the less frequently use word. Students use more frequently life, economically, lockdown, health, home, future, daily,online, activities, exams, staying, lockdown, opportunities, work, education, mental,pandemic.This words gives pre-images about the question how covis-19 affect in Students life.

Research Scholar

Highlighted and bigger word shows most frequently use word of sharing opinion. And other small highlighted word shows the less frequently use word. Research Scholar use more frequently research, life, affecting, Ph.D., lockdown, health, home, family, work, lock, mental, pandemic, opportunities, lab, positive, global.

This words gives pre-images about the question how covis-19 affect in Research Scholar life.



Figure 8. (Word Cloud Analysis of answers given by Students against “How COVID 19 affecting your life?”)



Figure 8. (Word Cloud Analysis of answers given by Research Scholars against “How COVID 19 affecting your life?”)

Consultant

Highlighted and bigger word shows most frequently use word of sharing opinion. And other small highlighted word shows the less frequently use word. Consultant use more frequently life, affecting, financial, situation, life, job, unemployed, change, opportunity, increase, family, country, business, working, home.

Thesewords are giving pre-images about the question

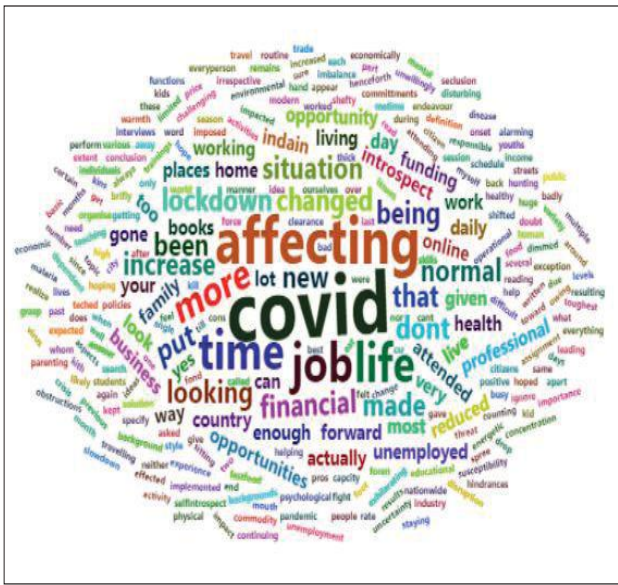


Figure 9. (Word Cloud Analysis of answers given by Consultants against “How COVID 19 affecting your life?”)

how COVID-19 affect in consultant life.

Conclusion

This survey particularly indicates the different difficulties and challenges towards environmental education as well as environmental employments while the natural environment is healing up during this pandemic period. This study paved way to draw attention of the government and policy makers.

Recommendations:

In this article we have discussed about the recent scenario of educational and employment on the environmental sector. As per the analyzed data, following recommendations have been highlighted.

- Follow government rules and regulations to combat COVID-19 and maintain personal hygiene.

- Follow the strategies to reframe NEGATIVE THOUGHTS to keep well mental health.
- Don't be depressed, share your emotions with family / friends / close persons and don't be judgmental while anyone sharing their emotions with you - be a good listener.
- Keep continuation with daily basic physical exercise and eat healthy - natural immune booster.
- Be positive about innovative business idea along with startups, be self dependent and contribute in country economy.

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