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A Novel Analysis of Portable Water Resources in India

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ABSTRACT: The increase in the studies of the environmental problems has brought up a new issue the issue of water management. The environmentalist are studying the living conditions in India including the portable or drinking water conditions. Its implications towards the health of people and its impact on the environment. Especially as the world becomes more and more inclined towards industrialization people are worried as to how this will affect the quality of water bodies in india. This paper will help us understand the water supply situation of India better. It will help with a clear and detailed analysis on the water degradation situation.

KEYWORDS: water degradation, Data visualization, chemicals

I. INTRODUCTION

There is more polluted water worldwide then there is water in some of the largest water basins worldwide. Water quality that is poor reduces the amount water left for the use of humans that includes drinking, agriculture and other water related activities. There is around 70% of wastewater coming from different industries and households that goes untreated into the rivers of India along with agricultural water mixed with a bunch of different chemicals and all these chemicals cause harm to the body of not only humans but anything that drinks or uses this water. As it is not clean water it also depletes the amount of drinking water available to human beings. This paper here will help us to understand the past trends in the degradation of water and how it will affect the future. We will be aiming to create visualizations from different aspects of the waterbodies and the chemicals that affect it to understand what we need to work on reducing.

Data:

The dataset consist of water quality information from all over India areas with affected water quality. It includes the years 2009 to 2012. This dataset has detailed information of the water quality degraded areas.

II. LITERATURE SURVEY

1.DRINKING WATER AND WELL-BEING IN INDIA: DATA ENVELOPMENT ANALYSIS¹

This paper uses the DEA (data envelopment approach)for estimating the wellbeing from drinking water using 'capabilities and commodities' approach. It shows the waters efficiency characteristics as achieved capabilities. It uses a bunch of data in the form of percentages to display water in different states and how its characteristics line up. The data it then visualised in the form of charts. The data is from one specific year 1990. It explains how different states in India line up in different water based analysis.

2. Water Pollution in India²

The central pollution control board in 1995 found that there were 18 major rivers in India that were contaminated. A lot of these rivers were found in and near the urban areas. This paper majorly focuses on specific details about the

degradation in the water bodies in India. It tells us how the water bodies are affected and specific statistics to prove it as well.

3. An Analysis of Physical and Monetary Losses of Environmental Health and Natural Resources in India³

This study tells us about the cost of environmental damage in terms of social and financial costs. It helps us to understand that these kind of water damages and what they do to the cost of life through a financial point of view. It also tells us about a few different other problems related to pollution.

Local Responses to Water Resource Degradation in India: Groundwater Farmer Innovations and the Reversal of Knowledge Flows
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4. Local Responses to Water Resource Degradation in India: Groundwater Farmer Innovations and the Reversal of Knowledge Flows⁴

Water is getting debased at an undeniably fast rate, requesting complex, dynamic methodologies custom fitted to neighbourhood settings. This examination zeroed in on innovative procedures by ranchers to diminish hazard and increment livelihoods. The surface and groundwater they utilized for water system was turning out to be debased due to inflows of to a great extent untreated metropolitan homegrown sewage water and modern effluent into the Musi River that goes through Hyderabad city, south India. Wastewater streaming into the waterway is diverted for water system in this dry spell inclined, semi-parched territory with falling groundwater tables.

5. Drinking Water, sanitation and hygiene in India⁵

The current report depends on data on a few things under three heads, viz. drinking water, disinfection and different parts of cleanliness, gathered on a decently extensive premise by peddling a nitty gritty square in Schedule 31 of the NSS 54th round. Just like the case in the previous rounds, in the current review as well, all such data looked for were just a piece of a multi-subject enquiry, albeit the other subjects of enquiry shifted over the rounds.

6. Iron in Drinking-water⁶

⁴Buechler, Stephanie. *Local Responses to Water Resource Degradation in India* ... www.jstor.org/stable/44319745.

⁵Thelwell, Kim. "Water, Sanitation and Hygiene in India." *The Borgen Project*, Kim Thelwell
https://Borgenproject.org/Wp-Content/Uploads/The_Borgen_Project_Logo_small.Jpg, 29 Oct. 2019,
borgenproject.org/water-sanitation-and-hygiene-in-india/#:~:text=Overall%2C%20clean%20drinking%20water%20and,90%20percent%20in%20August%202018.&text=In%20order%20to%20eliminate%20defecation,Mission%20to%20cease%20open%20defecation.

⁶Bruce. *Iron in Drinking Water*, www.idph.state.il.us/envhealth/factsheets/ironFS.htm.



This paper has an in-depth analysis of the iron situation and how it affects water. In what ways does it contaminate it and how to solve the problem. It has the results of several experiments conducted to water that has iron in it. It has detailed analysis of how iron affects human and from what sources.

7.WATER POLLUTION-SOURCES,EFFECTS AND CONTROL ⁷

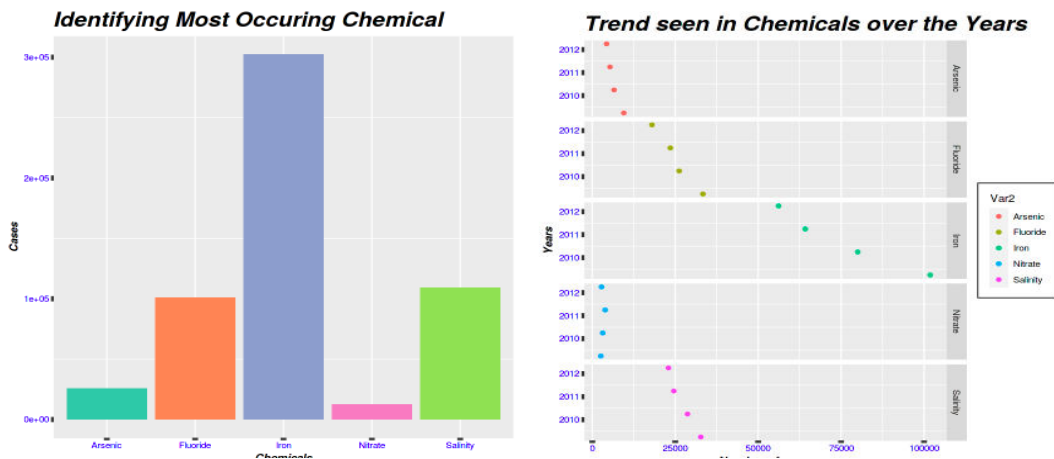
Water contamination has been an exploration centre for government and researchers. Subsequently, securing waterway water quality is amazingly earnest due to genuine water contamination and worldwide shortage of water resources. Water is one of the inexhaustible assets fundamental for supporting all types of life, food creation, financial turn of events, and for general prosperity. It is difficult to substitute for the greater part of its uses, hard to de dirty, costly to move, and it is really an exceptional blessing to humankind from nature.

8.FINDING SUSTAINABLE SOLUTIONS TO THE GLOBAL FRESHWATER CRISIS: LESSONS FROM INDIA ⁸

Thispaper portrays the principle results of the gathering, including information shared and proposals set forth for improving water quality utilizing practical methodologies. Water is the most fundamental material for human endurance, after air. Without water, life as far as we might be concerned would not be conceivable. However, clean drinking water is a scant asset in numerous pieces of the world, including India. Its main goal is to make local area and empower the sharing of information to animate logical development that tends to worldwide critical cultural objectives.

III. RESULTS

This section is meant to focus on the results we acquired from performing different visualizations.

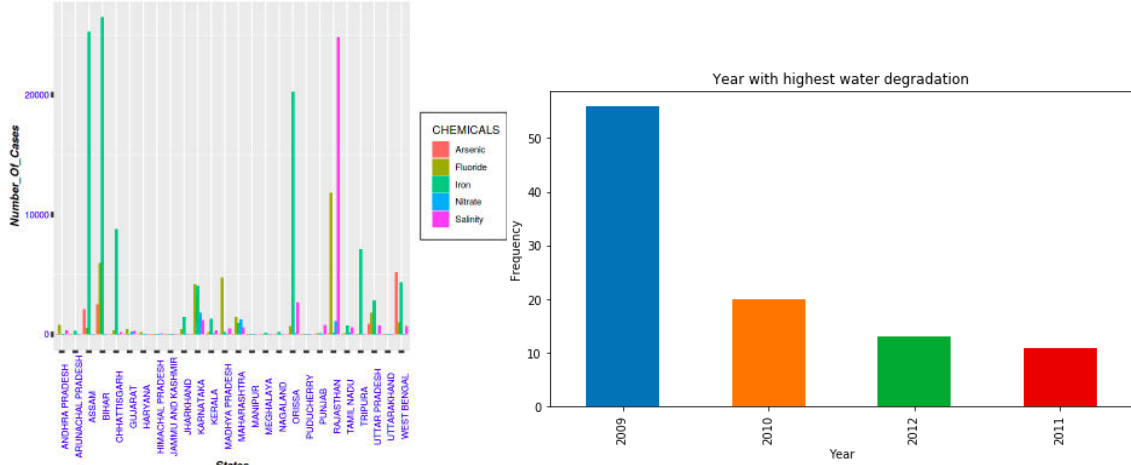


Inference: here we see that iron is the chemical causing the most damage to water bodies over these years and we can see in the second figure that over the years the amount of chemicals is increasing in amount. We can also see that the iron levels have increased drastically.

⁷Gupta, Asha. (2016). WATER POLLUTION-SOURCES,EFFECTS AND CONTROL. Pointer Publishers Jaipur..

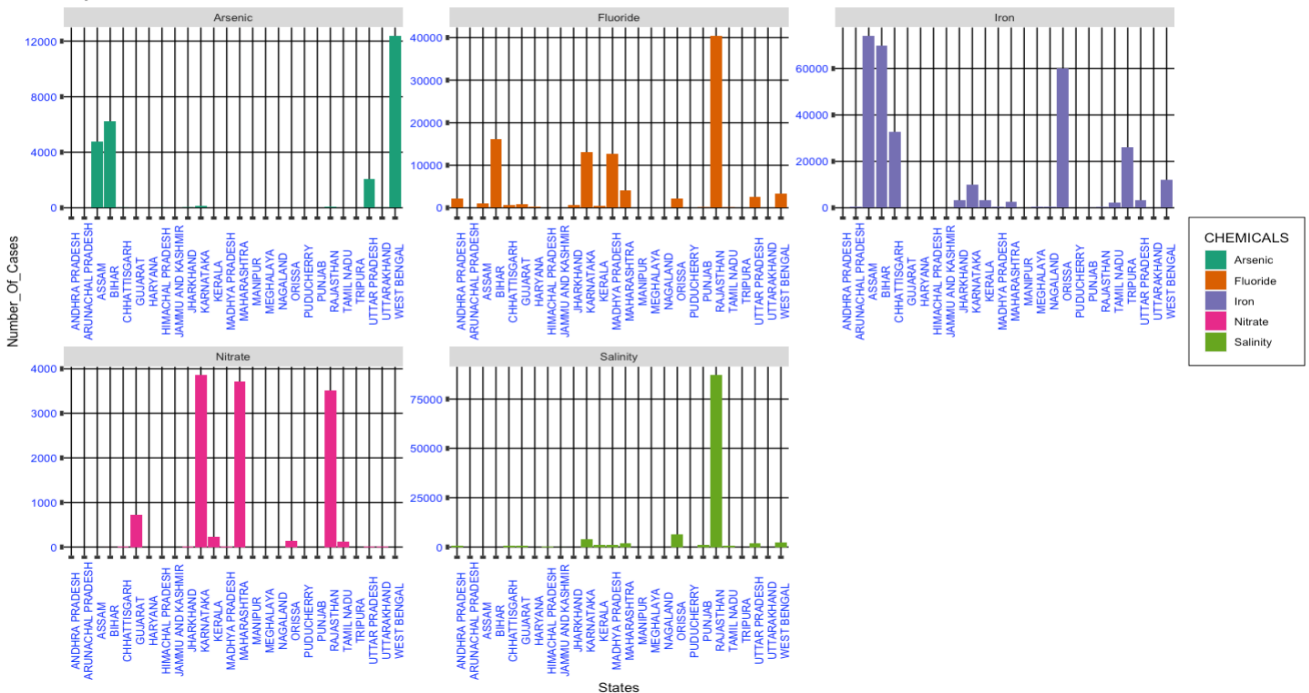


Chemical Composition instates of India

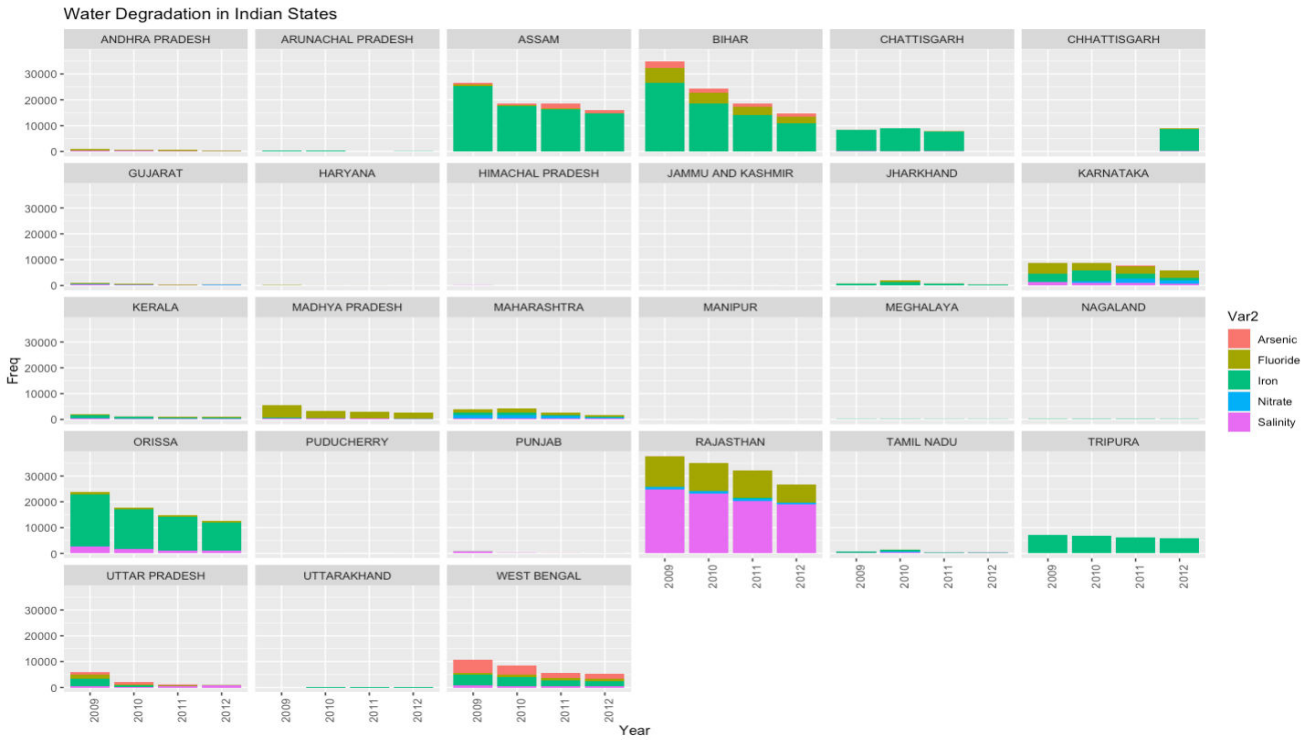


Inference: In the first figure we can see the chemical causing the most damage to water bodies in specific states here we can see that iron the chemical that is the green lines are pretty high and more in amount as well. But we see that in Rajasthan salinity is the most damaging. In the second figure we see that year 2009 had the most degradation counting all the amounts of chemicals.

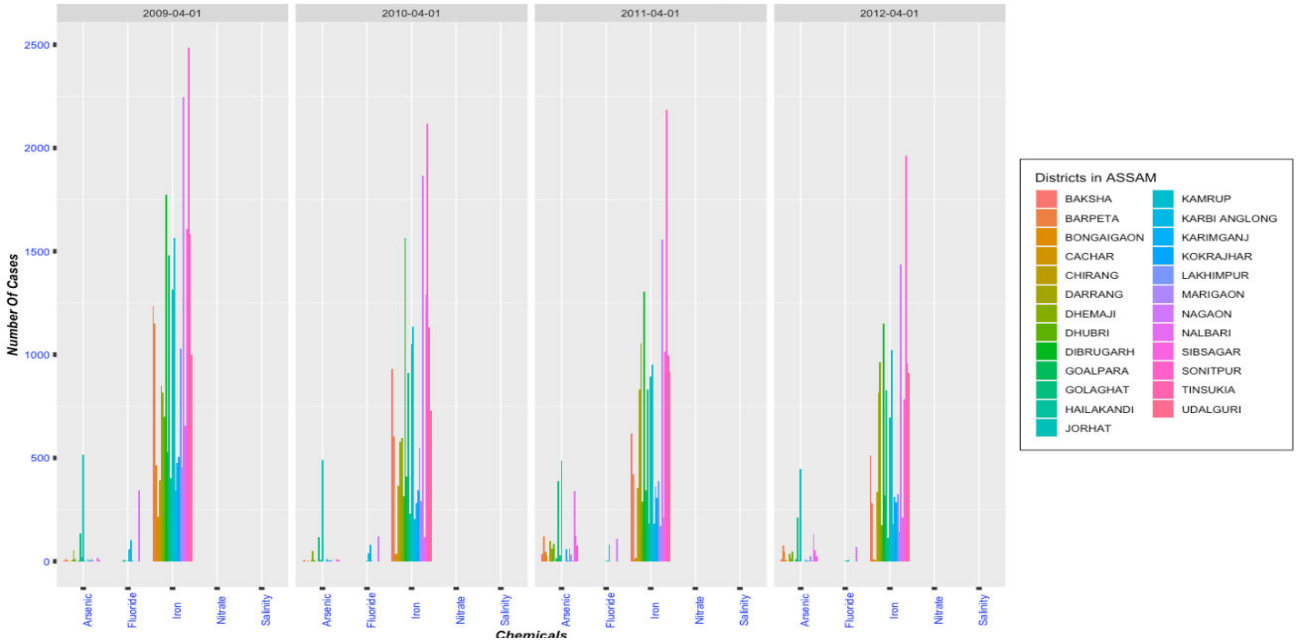
Specific Chemicals in states of India



Inference: here we see the specific amounts of chemicals in specific states .

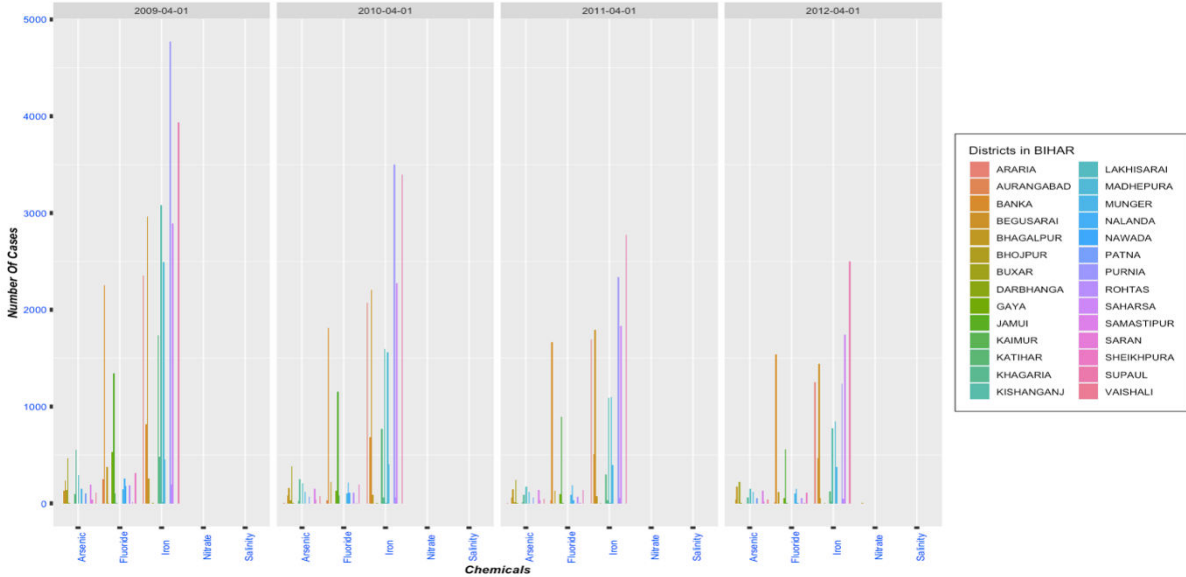


TREND of Chemical Composition in ASSAM Villages

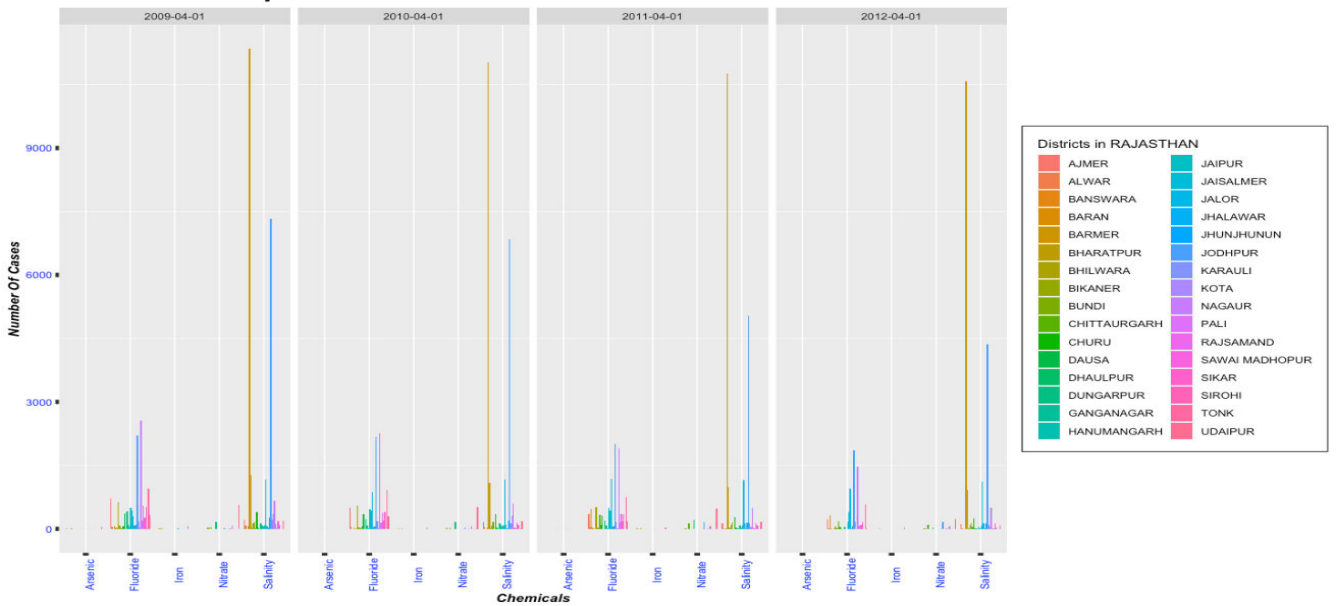


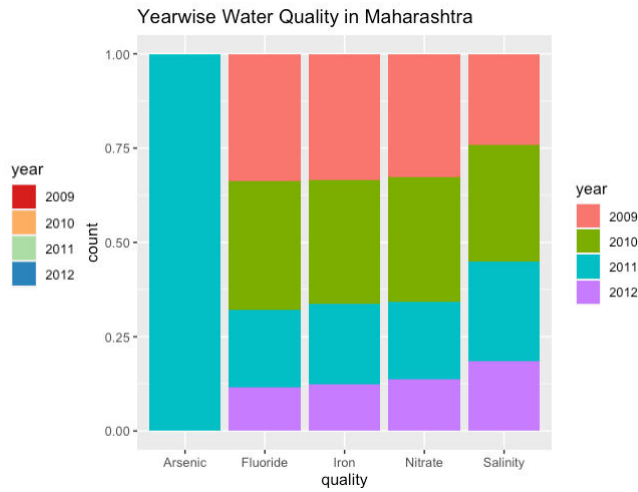
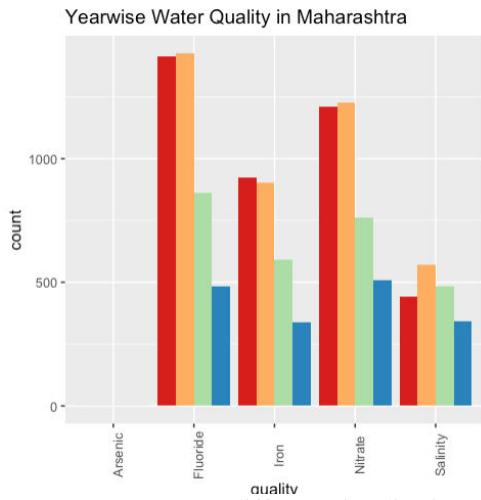


TREND of Chemical Composition in BIHAR Villages

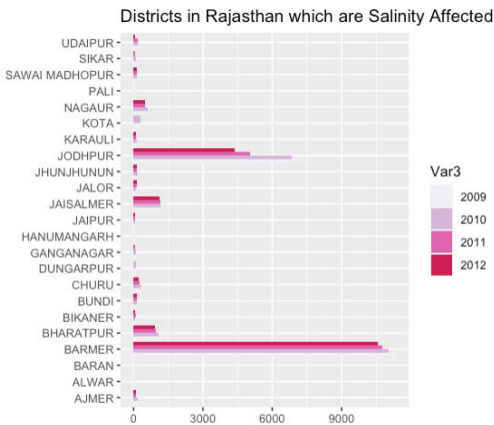


Chemical Composition in RAJASTHAN

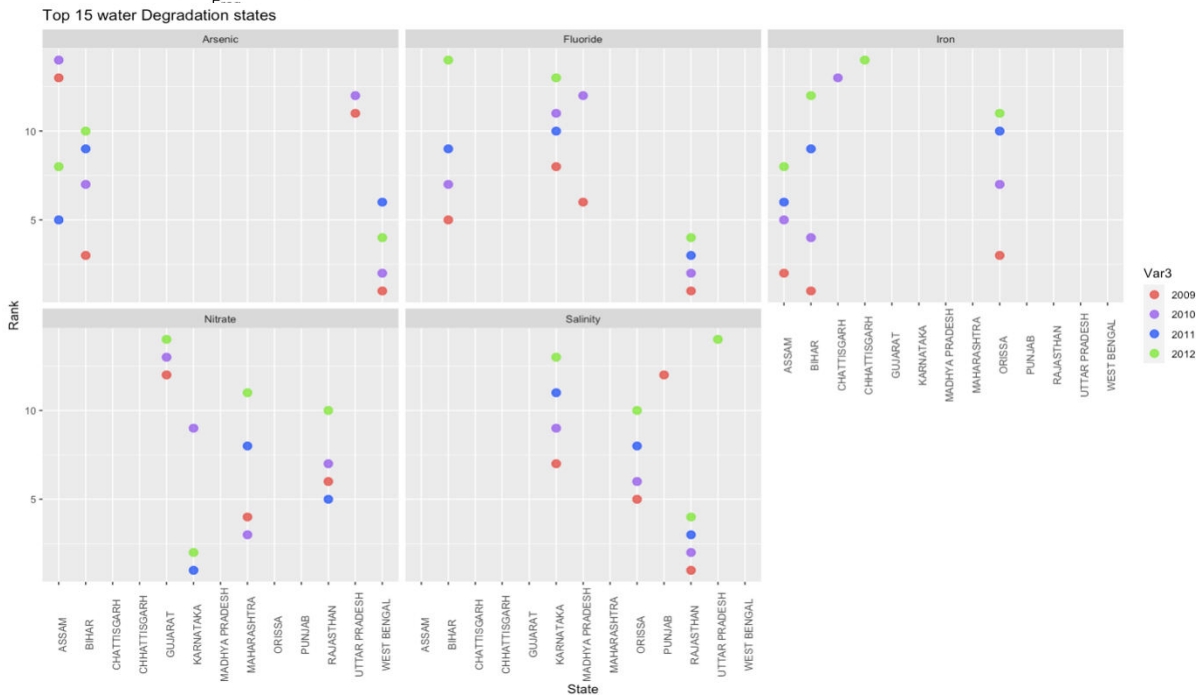




Inference: Here we see two different visualizations for a specific states water degradation levels.



Inference: here we go into more detail for a specific state that is Rajasthan we can see all the districts and their salinity levels as salinity is a huge problem in rajasthan



Rajasthan can be seen recorded as the state to have the highest number of degradation problems.

RAJASTHAN	131417
BIHAR	92328
ASSAM	79910
ORISSA	68618
KARNATAKA	30820
WEST BENGAL	30088
TRIPURA	26113
CHATTISGARH	25062
MADHYA PRADESH	14449
MAHARASHTRA	12480
UTTAR PRADESH	9916
CHHATTISGARH	8815
KERALA	4800
JHARKHAND	3895
TAMIL NADU	3164
ANDHRA PRADESH	2888
GUJARAT	2092
PUNJAB	1056
NAGALAND	618
ARUNACHAL PRADESH	612
MEGHALAYA	427
HARYANA	262
HIMACHAL PRADESH	88
JAMMU AND KASHMIR	67
UTTARAKHAND	57
PUDUCHERRY	17
MANIPUR	14

Name: State Name, dtype: int64

IV. FUTURE SCOPE & DISCUSSION

Getting more advanced technologies to break these chemicals further and understand what else will we be able to find through them could be of great help in the future aspects. We should also pay close attention to the amount of water that is there and a future analysis into that would help with a more detailed analysis.

V. CONCLUSION

As we see through these graphs and articles we realize that iron has the most degrading effect on water bodies and there are several reasons for iron to come in contact with water. Iron being an abundant resource especially in the earth's surface can be healthy for the body but when consumed in excess can also lead to reverse effects. Iron also has bacteria attached to it which can be dangerous to the human body. Other chemicals also have detrimental effects to the body. There are many different ways in which we can tackle this problem, and the first would be to completely understand it and that's what we have tried to do in this paper. The second thing we need to do to is to find ways to clear or clean the water of these issues that would mean taking all the necessary precautions. We can start at home by filtering out the water we drink and use but we also need to concentrate on the root which means we need to get a hold on the water that flows into the lakes and so on we need to filter out all the water that flows into the water bodies. This can be achieved with more strict rules for the industries that have water based waste that they dispose of into the water bodies. We need to also focus on the amount of fertilizers farmers use on the soil and monitor it.

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borgenproject.org/water-sanitation-and-hygiene-in-india/#:~:text=Overall%2C%20clean%20drinking%20water%20and,90%20percent%20in%20August%202018.&text=In%20order%20to%20eliminate%20defecation,Mission%20to%20cease%20open%20defecation.

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